Estimation of Need, Utilization, and Costs of Personal Care Homes and Home Health Services

F. DOUGLAS SCUTCHFIELD, M.D., and DONALD K. FREEBORN, Ph.D.

RISING costs and increased demands for medical care have forced a search for alternative and less expensive methods of providing optimum health care. Two such methods are home health services and personal care homes.

The concept of home health services is not new; it has been practiced for many years by various groups (*1*). Financial support through Medicare and Medicaid has stimulated its development. A number of programs have failed, however, because of underutilization of services due to lack of referrals from the physician community. Underutilization has increased costs per patient visit to the point where costs often exceed the guidelines for reimbursement.

Neither are personal care homes a new development (*2*). Personal care homes, unlike home health services, have not had Federal funding available to stimulate their development. In rural, isolated areas with largely aged populations, personal care homes could have a significant impact on the quality and quantity of medical care, especially if an illness is considered in its sociocultural context.

Many home health services and personal care homes have failed for lack of enough use to insure financial support. To avoid such a pitfall, we have attempted to describe a system for estimating the potential use of these services and also to characterize their potential users.

We have examined the feasibility of these services only on an economic basis. We realize, however, that there are many additional benefits to be gained from a personal care home and a home health service; for example, improved quality of care and psychological support of the family during an illness.

The Setting of Our Study

Rowan County is in the rugged, rural Appalachian terrain of northeastern Kentucky. Its 17,000 residents are primarily employed in farming. They are older and poorer than the average Kentuckian (*3*). The county's medical facilities include a 40-bed general hospital, St. Claire Medical Center, and a 50-bed extended care facility, the Daniel Boone Convalescent Center. The hospital and convalescent center serve as the primary health facilities for residents of the surrounding four-county area.

Method of Study

From January to March 1970, a questionnaire was included with the charts of all patients admitted to St. Claire Medical Center. The form was designed to gather information about the demographic

Dr. Scutchfield is director of continuing professional education, St. Claire Medical Center, and field professor of community medicine, University of Kentucky Medical School. Dr. Freeborn was associate director, Ohio Valley Regional Medical Program, Lexington, and assistant professor, department of behavioral science, University of Kentucky Medical School. He is presently senior scientist, Health Service Research Center, Kaiser Foundation Hospitals, Portland, Oreg.

Mrs. Phyllis DeHart, Mrs. Janet Hughbanks, and Mrs. Anne Cook helped in data collection and analysis. Tearsheet requests to F. Douglas Scutchfield, M.D., St. Claire Medical Center, Morehead, Ky. 40351

characteristics of the patients, the extent to which present hospital use could be altered by home health service and personal care homes, the potential use of these services, and the kinds of care required by patients who would use them. Attending physicians filled out the forms when a patient was discharged. Pediatric patients less than 14 years old, obstetrical patients, and the 27 patients who died while hospitalized during the study period were not included in the data analysis.

At the end of the study period, the questionnaires were checked against the list of persons discharged for that period. If a form had not been completed for an eligible patient, the attending physician was contacted and asked to complete one. Questionnaires were at least partially completed for all 318 eligible patients. Health administration personnel in the area provided cost estimates for these programs.

We originally included questionnaire forms with charts of the patients admitted to the Daniel Boone Convalescent Center, but the turnover of patients in that center was so slow that less than five questionnaires were completed. None of the five patients would have been referred to a home health service or a personal care home.

Results

Distribution of the patient sample by age group, sex, and type of payment is shown in table 1. Only 3.1 percent of these patients would have had no method of payment, and approximately 40 percent were over 60 years old.

Home health services. The impact of home health services on the present health system was examined by asking physicians whether they would have admitted certain patients if such services had been available. The physicians indicated that they would not have admitted nine patients or 2.8 percent to the St. Claire Medical Center and that 22 patients or 16.9 percent would have been discharged earlier. The physicians were then asked to estimate how much earlier, and they calculated that 22 patients accounted for 87 additional patient days of hospitalization in the absence of a home health service.

The attending physicians indicated that 66 or 20.8 percent of all eligible patients would have been referred to a home health service after their discharge from the hospital. The physicians also estimated that these patients would have required an average of 1.9 hours per week for 3.1 months before they could have been discharged from such a service. Estimating 1 hour per visit, this means that the average patient would have required 24.1 visits from a home health service until discharge.

Two internists, two surgeons, and four family physicians on the hospital staff participated in completing the survey form.

Type of payment, age group of patients who would have been admitted to a home health service, and specialty of the attending physician are shown in table 2. Predictably, Medicare and Medicaid would have been asked to handle most of the financial support of a home health service through payments by the patient. Only 9.3 percent of the patients who would have been referred to a home health service were not covered by at least one of these

Table 1. Demographic characteristics of patients eligible for home health services and personal care homes

Characteristics	Number	Percent
Age group (years):		
0–9	0	0
10–19	26	8.2
20–29	25	7.9
30–39	46	14.5
40–49	38	11.9
50–59	44	13.8
60–69	43	13.5
70 and over	66	27.1
Not recorded	10	3.1
Total	318	100.0
Sex:		
Male	146	45.9
Female	171	53.8
Not recorded	1	.3
Total	318	100.0
Type of payment:		
No method of payment	10	3.1
Medicare	32	10.1
Medicaid	32	10.1
Workman's compensation	9	2.8
Vocational rehabilitation	16	5.0
Private	135	42.6
Medicare and compensation	1	.3
Medicare and Medicaid	71	22.3
Medicare and private	9	2.8
Vocational rehabilitation and private	3	.9
Total	318	100.0

federally subsidized health insurance plans.

A corollary to this is the larger proportion of patients 60 years old and older who would have been referred to a home health service. Although specialists in internal medicine served only 24.5 percent of the total patient study group, they had 82.9 percent of the patients who would have been admitted to a home health service, a difference that is statistically significant.

If we assume that the January–March experience holds throughout the year, 264 patients would have been referred to a home health service. If these patients had averaged 24 visits by the staff of the home health service, based on estimates of the attending physicians, there would have been 6,336 home health service visits per year.

The following tabulation shows an annual operating cost estimate of $46,800 for home health services. Based on this estimate and the annual number of visits, the cost would have been $7.39 per patient visit or $177.27 for the average patient admitted to these services. At a hospital cost of $44 per day, this amounted to four inpatient days.

Activity	*Cost*
Medical director, 10 percent of time	
Registered nurse director, full time	$7,200
Staff nurse, full time	6,800
5 home health aides, full time, at $3,200	16,000
Travel	6,000
Supplies and office equipment	3,000
Administrative costs, 20 percent of salaries	7,800
Total	46,800

The State of Kentucky currently pays $6,300 as a starting salary for a home health nurse director and $3,192 for a home health aide.

The type of service that the physician would have prescribed for patients referred to home health services is shown in table 3. Apparently, most of the time would have been spent with nursing duties; for example, colostomy care, catheter care, and patient education. Counseling in dietetics and physical therapy were next in order of importance, according to the physician.

Personal care homes. Similar questions were asked about the use of personal care homes. The at-

Table 2. Characteristics related to patients who would have been referred to home health services

Characteristics	Home health service patients		Total sample	
	Number	Percent	Number	Percent
Type of payment:				
Medicare only	14	21.6	30	10.1
Medicaid only	8	12.3	32	10.7
Workman's compensation only			9	3.0
Vocational rehabilitation only	1	1.5	16	5.4
Private insurance only	5	7.7	133	44.7
Medicare and workman's compensation	1	1.5	1	.3
Medicare and Medicaid	35	53.9	66	22.1
Medicare and private	1	1.5	8	2.7
Rehabilitation and private			3	1.0
Total	[1] 65	100.0	[1] 289	100.0
Age group (years):				
0–9	0		0	
10–19	1	1.5	26	8.6
20–29			25	8.4
30–39	1	1.5	46	15.4
40–49	2	3.1	38	12.8
50–59	5	7.8	42	14.0
60–69	10	15.6	41	13.8
70 and over	45	70.5	81	27.0
Total	[1] 64	100.0	[1] 299	100.0
Specialty of attending physician:				
Surgeon	7	10.6	183	59.6
Internist	54	82.9	106	24.5
Family physician	5	7.5	18	5.9
Total	[1] 66	100.0	[1] 307	100.0

[1] Numbers differ because of incompleted questionnaires.

Table 3. Type of services required by patients referred to the home health agency

Service	Number of patients	Percent
Nursing only	27	32.5
Nursing and dietetics	17	20.6
Nursing and physical therapy	14	16.9
Dietetics only	10	12.0
Physical therapy only	7	8.4
Nursing, physical therapy, and dietetics	4	4.8
Physical therapy and dietetics	3	3.6
Not recorded	1	1.2
Total	83	100.0

Table 4. Characteristics related to patients who would have been referred to personal care homes

Characteristics	Personal care home patients		Total sample	
	Number	Percent	Number	Percent
Type of payment:				
Medicare only	7	30.4	30	10.3
Medicaid only	3	13.0	30	10.3
Workman's compensation only			9	3.1
Vocational rehabilitation only	1	4.3	15	5.2
Private insurance only			133	45.9
Medicare and workman's compensation				
Medicare and Medicaid	10	43.6	62	21.4
Medicare and private	2	8.7	8	2.8
Rehabilitation and private			3	1.0
Total	[1] 23	100.0	[1] 290	100.0
Age group (years):				
0–9				
10–19			26	8.6
20–29			25	8.3
30–39			46	15.3
40–49	1	4.5	38	12.6
50–59	2	9.0	44	14.7
60–69	3	13.7	33	11.1
70 and over	16	72.8	88	29.4
Total	[1] 22	100.0	[1] 300	100.0
Specialty of admitting physician:				
Surgeon	3	13.0	183	61.2
Internist	17	74.0	98	32.8
Family physician	3	13.0	19	6.0
Total	[1] 23	100.0	[1] 299	100.0

[1] Numbers differ because of incompleted questionnaires.

tending physicians said 12 patients or 3.8 percent would never have been admitted to the hospital had personal care homes been available, and, based on the physicians' estimates, earlier discharges from the hospital would have saved 77.5 hospital days.

The attending physicians would have referred 23 patients or 7.2 percent to a personal care home if one had been available. These 23 patients would have had an estimated stay of 7.5 months per patient. Extrapolating for a 1-year period, one could have expected 92 admissions to personal care homes. With an average stay of 7.5 months per patient, a 55-person capacity home would have had 100 percent occupancy. Based on the current public assistance payments of $161 per person per month in a personal care home, an estimated $106,260 income would have been realized by the home.

Type of payment, age group of patient, and specialty of attending physician for the sample patients who would have been referred to a personal care home after discharge from the hospital are shown in table 4. As with home health services, only 4.3 percent of the patients who would have been referred to a personal care home were not covered by Medicare or Medicaid. The group who would have been admitted to such a home were older than the sample. While 32.8 percent of the patients with completed questionnaires had a specialist in internal medicine as an attending physician, 73.9 percent of those who would have been referred were attended by an internist.

Attending physicians indicated that they would have preferred home health services over personal care homes for 49 or 15.4 percent of the patients, personal care homes over home health services for 20 or 6.3 percent, and both services for 12 or 3.8 percent.

Discussion

Implementation of home health services could have saved 348 patient days annually in a general hospital; at current hospital costs the saving would have been $14,616. An annual budget of $46,800 for home health services and approximately 6,000 patient visits apparently would have made such services financially feasible.

The cost of personal care homes were difficult to measure. From our data it appeared that a 50-bed personal care home would have had essentially 100 percent occupancy and would have generated, from public assistance, an annual income of approximately $106,000. If a good-quality personal care home could be maintained at this annual operating cost, such a home would be feasible.

One would have to be extremely cautious in implementing both programs simultaneously as one program could cannibalize the other, produce underutilization of both, and perhaps contribute to the collapse of both.

As pointed out previously it is extremely important to examine the projected need and use of home health services and personal care homes before implementing such programs. If a patient is assigned to a home health service, it must be at a physician's order. The limiting factor then would be the physician's perception about the adequacy of post hospital care.

The best mechanism for ascertaining use would be to project physician admissions to such a service.

Although a physician's order is unnecessary for admission to a personal care home, the physician should have an adequate knowledge of the capacity of the patient or the patient's family to provide for the needs of daily life. It therefore does not seem unreasonable to ask for his judgment when attempting to project the use of that service.

Based on our data, we can also predict that the patients admitted to personal care homes and home health services would be older than the general population, and that the services would be financed by federally subsidized health insurance or public assistance. The old and the poor are more likely to have inadequate home care situations and chronic and debilitating illnesses that would account for their use of these facilities. Also, the physicians providing patient care may not be aware of the importance of home health services in the care of any age and socioeconomic group or any diagnostic category, but we have not tested this hypothesis.

Similar points could be made concerning the projected use of such services by the three types of physicians in the area. The internist may have the old, poor patient with a chronic debilitating disease, or the surgeons and family physicians may not perceive the importance of these services to the patient's care. Although our study was not designed specifically to answer such questions, we feel that these hypotheses could be tested by future investigators.

REFERENCES

(*1*) Roth, M. E.: The value of coordinated and comprehensive home care. Amer J Public Health 57: 1841–1847, October 1967.

(*2*) Solon, J., Robert, D. W., Krueger, D. E., and Baney, A. M.: Nursing homes, their patients and their care: A study of nursing homes and similar long-term care facilities in 13 States. Public Health Monograph No. 46. U.S. Government Printing Office, Washington, D.C., 1957.

(*3*) Brown, J. S., and Ramsey, R. J.: Kentucky's population in the 1960's. Resource Development Series No. 9. University of Kentucky, Lexington, September 1963.

SCUTCHFIELD, F. DOUGLAS (St. Claire Medical Center), and FREEBORN, DONALD K.: ***Estimation of need, utilization, and costs of personal care homes and home health services. HSMHA Health Reports, Vol. 86, April 1971, pp. 372–376.***

To gauge the success of a home health service or a personal care home, it is necessary to estimate the potential need and use of such services. These were measured by obtaining from a patient's attending physician an estimate of the patient's need for these services after his discharge from the hospital.

Of 318 patients discharged from a general hospital, 9 or 2.8 percent would never have been admitted to the hospital if a home health service had been available. In addition, 22 or 16.9 percent of the patients would have been discharged earlier. Early discharge would have saved 87 hospital days. A total of 66 or 20.8 percent of these patients would have been referred to a home health service when discharged.

Based on estimates of the attending physicians, there would have been 6,336 visits for home health services. The cost of these services was estimated at $46,800, or $7.39 per visit.

Of the 318 patients discharged from the hospital, 12 or 3.8 percent would have been admitted to a personal care home had such a service been available, and early discharge from the hospital would have saved 77.5 hospital days. Based on estimates, a 50-bed personal care home would have remained 100 percent occupied. At current payments, the personal care home would have received $106,200.