Posthospital Needs of Elderly People at Home: Findings from an Eight-Month Follow-Up Study

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In a study of 737 elderly hospital patients discharged to their homes in suburban areas northwest of Chicago, Illinois, 60 percent were assessed as needing help with personal care or housekeeping. Only 19 percent were referred by the hospital to community service agencies and, in the immediate postdischarge period, a large proportion of help in both personal care and housekeeping was given by relatives. Eight months after discharge, however, the proportion of care provided by relatives had decreased and the proportion of paid help had increased. The use of help at both points in time was strongly related to limitations in the basic activities of daily living (ADL) at time of hospital discharge. Many patients were unaware of available community services, and 64 percent said that no one in the hospital had talked with them about managing at home. These findings indicate the need for rethinking criteria for hospital discharge planning, more effective communication between service providers and patients, and community focus of attention on elders coming home from the hospital.

The need for information about use of formal community services by the elderly population has been intensified since the prospective payment system for hospitals (PPS) became effective in 1983. Length of

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hospital stay for Medicare beneficiaries, after falling 1–2 percent annually for some time, dropped a precipitate 9 percent in 1984, along with a 3.5 percent decrease in the admission rate (Guterman and Dobson 1986). This situation has prompted concern that shorter stays might lead to discharge of patients with greater medical care needs than community agencies are accustomed to serving. In response to this concern, the Health Care Financing Administration (HCFA) and others have initiated a number of studies of the effect of PPS on access to care in the postdischarge period (Eggers 1987). Evaluation of the issue has been hampered by the fact that little information is available for the pre-PPS period (Schramm and Gabel 1988). As pointed out by Soldo and Manton (1985), previous research efforts in long-term care have focused largely on nursing home admissions with little attention given to use of formal services in the community.

The dearth of information about use of community-based services by elders living at home was one of the reasons the Northwest Service Coordination for the Health Impaired Elderly of Cook County, Incorporated (NSC) undertook a study in 1982 of elderly residents discharged to their homes from acute care hospitals.

NSC was one of eight projects funded by the Robert Wood Johnson Foundation for the broad purpose of "integrating and coordinating at a community level the diverse array of services needed by elderly citizens with health problems" (Robert Wood Johnson Foundation 1979). The project area of eight townships northwest of Chicago had recently experienced both rapid growth in the number of elderly residents and a proliferation of service agencies. Differing eligibility requirements by agencies and overlapping municipal, township, and provider boundaries were potential, if not actual, barriers to care for elders with health problems (Robert Wood Johnson Foundation 1980).

NSC's choice of a study of hospital discharges as an aid in program planning was based on the fact that a considerable proportion (25–30 percent) of all elders over 65 years are hospitalized in a given year (Bloom 1982). Furthermore, elders discharged to their homes after an illness requiring hospitalization were thought to be at relatively high risk of needing the kinds of community-based services NSC wished to coordinate.

The study plan therefore included (1) determining the characteristics of elderly patients going home from the hospital, including functioning status at time of discharge; (2) inquiring about patients' knowledge of existing services in the community; (3) learning what help they were receiving in the early postdischarge period and again

eight months later; and (4) determining changes in functioning status over the eight-month follow-up period. Data thus obtained by direct interviews with the participating patients would be used not only to pinpoint areas for improvement in the community service network but also as a baseline against which change in the future might be observed.

The findings from these first observations have implications for all hospitals and other agencies delivering care to the elderly. They provide a broader view of the nature of home assistance than do many of the studies cited, in that all help is included—both unpaid and paid, regardless of source of payment—for an extended period of time after the hospital discharge.

STUDY DESIGN AND METHODS

Fifteen Illinois hospitals participated in the study, nine in northwest suburban Cook County and six in Lake County, adjacent to Cook County on the north. These 15 hospitals combined have accounted for about 70 percent of all discharges of residents 65 years or older, wherever in Illinois they were hospitalized. In 1982, 80 percent of Medicare patients in the 15 hospitals were discharged home, 11 percent to nursing homes, and 2 percent to other institutions; 7 percent died in the hospital.

The sample of study patients was constructed so that its distribution by hospital was similar to the distribution of all elderly discharges to the area by these hospitals. In order to maximize the numbers in the sample who might need posthospital in-home services from community agencies, and who were likely to be available for follow-up, subjects were further defined as hospital inpatients with the following characteristics:

- Age 70 years or older
- Length of stay in hospital of three days or more
- Admitted from a noninstitutional setting
- Discharged to a noninstitutional setting in the study area
- Not considered terminally ill at time of discharge.

In addition, the sample was weighted to yield four times as many patients with disability in basic living functions as would be expected in an unweighted sample discharged to their homes. The expected distribution by functioning status had to be determined from a special pre-

study sample of hospital charts, since aggregate data on patients' functioning status were not available in any hospital—a situation that prevails generally. For this preliminary study, a random sample of 50 charts of recently discharged elderly patients in each hospital was read, the charts were classified by functioning status, and the results were summed for the area as a whole.

Selection of inpatients for the study began in October 1982 and continued through March 1983. Hospitals were assigned a quota to fill with study patients in specified age and functioning status categories. Hospital personnel, selected for the purpose by their administrators and trained by study staff, identified patients meeting selection criteria and invited them to participate. Following patients' informed consent, hospital interviewers completed a face sheet for each patient, containing demographic information and particulars of the hospital stay obtained from hospital records, and functioning status as observed by nursing staff within 48 hours preceding discharge. These face sheets were transmitted to the Survey Research Laboratory of the University of Illinois, Chicago Circle Campus, which was responsible for scheduling and conducting two home interviews with each study patient. All home interviews were arranged by appointment. The first took place within the second week after discharge and the second about eight months later. Interviewers used a structured questionnaire developed by the authors.

A total of 737 patients agreed to participate and had a first home interview. Their characteristics at discharge, referrals made on their behalf, and the help they received up to the second week after discharge are discussed. Home interviews eight months later were conducted for 612 of the original group; 575 were complete interviews with the patient and 37 were with a proxy respondent who had intimate knowledge of the patient. Analysis of outcomes includes reasons for noninterview of 125 patients obtained from the patients themselves or from relatives, neighbors, or service providers. Finally, change over time in functioning status and help received at home is described for the 575 patients with two complete interviews. Factors affecting subsequent status are discussed.

CHARACTERISTICS OF THE STUDY PATIENTS

Females in the sample outnumbered males by a ratio of three to two, and females were older than males; in the age group 80 years or older,

Table 1: Demographic Characteristics of Patients 70 Years or Older Discharged to their Homes from Hospitals in Cook and Lake Counties, Illinois, October 1982–March 1983

	All Ages 70 Years or Older	*70–74 Years*	*75–79 Years*	*80 Years or Older*
Total in study sample	737	272	226	239
Percent Distribution by Sex				
Both sexes	100.0	100.0	100.0	100.0
Males	40.2	47.4	39.8	32.2
Females	59.8	52.6	60.2	67.8
Percent Distribution by Age				
Both sexes	100.0	36.9	30.7	32.4
Males	100.0	43.6	30.4	26.0
Females	100.0	32.4	30.8	36.7
Percent Distribution by Living Arrangements				
Males	100.0	100.0		100.0
Living alone	12.5	11.4		15.6
Living with others	87.5	88.6		84.4
Females	100.0	100.0		100.0
Living alone	37.0	39.4		32.7
Living with others	63.0	60.6		67.3

the number of females was more than twice the number of males. Also, many more females than males, proportionately, were living alone (Table 1).

Functioning status at discharge (Table 2) is described in terms of six basic activities of daily living (ADLs) comprising the Katz index: bathing, dressing, toileting, transferring, bowel and bladder continence, and eating/feeding (Katz and Akpom 1976). In addition, hospital interviewers recorded their judgments of whether or not patients would need help at home with meal preparation and other housekeeping activities.

Among patients participating in the study, the percentages with dependencies varied with age. Those over 80 years were more likely to be severely disabled, that is, dependent in four or more ADL activities, than were patients 70–79 years of age, regardless of whether they lived alone or with others.

The apparent excess of disability among patients living with others compared with those living alone, as shown in Table 2, could be explained by the nature of the sample if one considers the likelihood that people living alone do so because they *are* able to function independently. Lawton hypothesized that all community studies of the elderly

Table 2: Functioning Status at Discharge of Patients Going Home from the Hospital: Percentage Distribution by Age Group and Usual Living Arrangements

ADL Functioning Status at Discharge*	Age and Usual Living Arrangements				
	All Patients 70 Years or Older	70–79 Years		80 Years or Older	
		Alone	With Others	Alone	With Others
Total					
Number	737	135	363	65	174
Percent†	100.0	100.0	100.0	100.0	100.0
A, no ADL dependency	50.2	67.4	53.7	44.6	31.6
No home help needed	38.5	51.1	42.7	30.8	23.0
Home help needed	11.7	16.3	11.0	13.8	8.6
B, C, D, one to three ADL dependencies	31.1	24.5	31.6	33.8	33.9
E, F, G, four or more ADL dependencies	17.7	5.9	14.3	20.0	32.8
Unknown status	1.1	2.2	0.3	1.5	1.7

*The ADLs (basic activities of daily living) are bathing, dressing, toileting, transferring, bowel and bladder continence, and eating/feeding. "Dependency" means needing assistance from another person, or incontinence. "Home help needed" refers to the hospital assessor's judgment about the patient's ability to get meals or perform light housekeeping chores after returning home.

† Percents may not add to 100.0 because of rounding.

provide samples of "live-alones" from whom the most severely impaired have already been removed to institutions (Lawton, Moss, and Kleban 1984).

In order to arrive at an *unweighted* estimate of elderly hospital patients who would need help at home, we adjusted the study data to the age/living arrangements/functioning status distribution obtained from the prestudy record sampling. The resulting calculation indicated that 21 percent of all elderly patients going home would need help with the basic ADLs and another 19 percent would need help with meals, laundry, and other regular housekeeping chores, making a total of 40 percent for whom help must be provided or arranged. That the hospital population is at higher risk of needing help than the general population is seen by comparing these figures with the 1982 National Long-Term Care Survey, in which it was found that 25 percent of people 75–84 years of age living in the community were dependent in basic and other activities of daily living (Soldo and Manton 1985).

REFERRALS FOR HOME SERVICES

Referrals to agencies providing in-home services were reported for only 19 percent of the study patients (Table 3). The majority of these referrals were for nursing service. A few were for home-delivered meals or housekeeping help.

As might be expected, referrals were reported most frequently for females living alone who needed assistance with one or more of the basic ADLs (37.3 percent). It is curious, however, that 63 percent of this group did *not* have a referral for help with those basic activities in which they required assistance at the time of the hospital discharge.

KNOWLEDGE OF SERVICES

One reason for lack of referral to community agencies is that the patient's relatives or friends are expected to provide the needed assistance. In other cases, assuming no economic or entitlement barriers, patients or families may refuse agency referrals because they misunderstand the potential benefits—or they may be doubtful about the quality of services or prejudiced against receiving formalized help, especially publicly funded help, or both. During the first home interview, patients were asked about their knowledge of and attitudes toward in-home and other types of services provided by community agencies, each type of which was available in their residential area (Table 4). More of the group knew about home-delivered meals (76.7 percent) and special transportation for the elderly (73.2 percent) than about other types of services. Only 28.5 percent knew of agencies providing housekeeping or chore services. Between these extremes, about half of the respondents (53.1 percent) reported knowledge of community agencies providing home nursing care.

To questions about future use of the listed services, the majority of patients responded that they would use them in the future if necessary. Nearly one-third, however, rejected the idea of congregate meals, group socialization ("a place to spend the day in order to be with people"), friendly visitors, and counseling about personal problems. One-fifth said they would not want home-delivered meals or housekeeping help from outside. Comments to interviewers by individuals in this group of patients expressed strong dislike for dependence on anyone but family members.

Table 3: Percentages of Patients for Whom Referrals for In-Home Services Were Made to Community Agencies at Time of Discharge from Hospital, by Sex, Functioning Status at Discharge, and Living Situation

Functioning Status at Discharge and Sex*	*All Patients*			*Patients Living Alone*			*Patients Living with Others*		
		Referrals Made			*Referrals Made*			*Referrals Made*	
	Total	*Number*	*Percent†*	*Total*	*Number*	*Percent†*	*Total*	*Number*	*Percent†*
Total all respondents	737‡	140	19.0	200‡	45	22.5	537‡	95	17.7
A, no help needed	284	20	7.0	89	10	11.2	195	10	5.1
A, some help needed	86	14	16.3	31	8	25.8	55	6	10.9
B-G	359	106	29.5	76	27	35.5	283	79	27.9
Males, total	296‡	43	14.5	37	6	16.2	259‡	37	14.3
A, no help needed	142	8	5.6	22	3	13.6	120	5	4.2
A, some help needed	30	4	13.3	6	1	16.7	24	3	12.5
B-G	122	31	25.4	9	2	22.2	113	29	25.7
Females, total	441‡	97	22.0	163‡	39	23.9	278‡	58	20.9
A, no help needed	142	12	8.5	67	7	10.4	75	5	6.7
A, some help needed	56	10	17.9	25	7	28.0	31	3	9.7
B-G	237	75	31.6	67	25	37.3	170	50	29.4

*See Table 2 for definition of functioning status.

† Percent of total in sex/functioning status category.

‡ Includes patients with unknown functioning status.

Table 4: Knowledge and Attitudes about Community Agencies Providing Specified Services: Responses to Questions at First Home Interview of 737 Study Patients

	Percent Distribution of Responses in Each Category				
	Knows About the Service		*Would Use If Needed*		
Type of Service	*Yes*	*No*	*Yes*	*No*	*Undecided*
In-home nursing	53.1	46.9	85.6	6.2	8.1
Meals delivered to home	76.7	23.3	70.1	21.7	8.1
Meals in community location	52.3	47.7	59.2	32.3	8.5
Housekeeping, chore	28.5	71.5	71.5	20.6	7.9
Transportation	73.2	26.8	78.0	13.7	8.3
Place to spend the day	65.5	34.5	60.7	29.9	9.5
Friendly visitors	34.1	65.9	61.5	29.6	9.0
Counseling (help with personal problems)	32.4	67.6	60.0	31.5	8.5

HELP RECEIVED AT HOME

At the first home interview, patients were asked about the help they had received since coming home from the hospital, regardless of the source of help. Table 5 shows the percentage who reported paid or unpaid help with three categories of activities: personal care, housekeeping, and administration of medications such as eye drops or prescribed oral medications. The data are given according to patients' ADL status at discharge (with ADL disability or without). In both groups the percentages with housekeeping help were very high (97.2 and 88.1 percent, respectively). On the other hand, twice as many of the patients with ADL disability as those without ADL disability had personal care help (55.2 versus 24.3 percent) and help with medications (33.1 versus 15.9 percent).

The contribution of family and friends to direct care of the elderly, which has been documented frequently, was evident in this study also. A large majority of patients with help of each type were receiving it from unpaid helpers. Paid help figured proportionately most prominently in the personal care category, in which the 39.8 percent of patients with help included 12.9 percent who were employing paid helpers.

Additional detail on personal care help is given in Table 6 for those patients who responded in person to reinterview eight months after discharge. Proxy responses are not included because information on current functioning status and help with various activities was accepted

Table 5: Percentages of Patients Getting Help at Home at Time of First Home Interview, by Type of Help and Patient's Functioning Status at Discharge from Hospital

	*Functioning Status at Discharge**		
Type of Help	*All Patients*	*Patients without ADL Disability*	*Patients with ADL Disability*
Total Patients			
Number	737†	370	359
Percent	100.0	100.0	100.0
Personal Care	39.8	24.3	55.2
Paid help	12.9	5.7	20.1
No paid help	26.9	18.6	35.1
Housekeeping	92.7	88.1	97.2
Paid help	15.7	13.6	17.7
No paid help	77.0	74.5	79.5
Medications	24.4	15.9	33.1
Paid help	5.4	2.2	8.4
No paid help	19.0	13.7	24.7

*See Table 2 for definition of functioning status.

† Includes patients with unknown functioning status.

only if supplied by patients themselves. The data are given for three points in time: before hospitalization, at first home interview, and at reinterview eight months later.

Two facts stand out in the findings for this group of patients. One is that even before the hospital episode, more of the patients with ADL disability at discharge were getting personal care help (31.9 percent) than were those without the disability (13.7 percent) and, although the percentage with helpers increased for both groups immediately after the hospitalization, the difference between the groups persisted through the second interview. In neither group did the percentage *without* help return to the prehospital level.

The other finding is that, although the majority of personal care helpers for all three time periods were relatives, the proportions changed between the first and second interviews. Regardless of functioning status at discharge, there was an increase in use of paid help and, in the group with ADL disability, an increase in family share of the cost. Manton and Soldo (1985) have pointed out that the likelihood of use of formal care services increases with both age and increasing disability. In our study population, such a change in personal care services appears to have occurred in the relatively short time of eight

Table 6: Particulars of Personal Care Received Prior to Hospitalization and at First and Second Home Interviews by Patients with Two Complete Interviews, According to ADL Status at Discharge from Hospital*

	307 Patients without ADL Disability at Discharge†			*263 Patients with ADL Disability at Discharge†*		
	Prior to Hospital	*1st Home Interview*	*2nd Home Interview*	*Prior to Hospital*	*1st Home Interview*	*2nd Home Interview*
Percent of patients with personal care helpers	13.7	21.8	20.5	31.9	51.3	52.1
Average number of helpers (for those with help)	1.7	1.6	1.3	1.6	1.7	1.7
Percent with paid helpers‡	5.2	4.9	9.1	12.2	19.4	25.2
Percent with relatives helping ‡	8.1	16.9	13.4	24.0	43.0	38.0
Percent with other unpaid helpers‡	7.5	6.8	9.8	13.0	19.8	27.0
Percent of patients by payment source						
Patient/family pays all	62.6	46.7	70.4	68.8	49.0	72.3
Patient/family pays some	25.0	33.3	7.4	9.4	16.3	15.4
Patient/family pays none	12.5	20.0	22.2	21.9	34.7	12.3

*See Table 2 for definition of functioning status.

†A total of 575 patients had two complete interviews; five are excluded because of unknown functioning status at discharge.

‡Categories not mutually exclusive.

months, accelerated, perhaps, by the illness that had brought on the hospitalization.

Changes in use of helpers for housekeeping and medications were similar in direction but not in magnitude to the changes just described; differences over time and between ADL groups were less marked. The data are not shown but are available.

FOLLOW-UP STATUS OF THE STUDY GROUP

The 575 patients with a complete second interview represented 78.0 percent of the group of 737 entering the study. An additional 37, or 5.0 percent, responded at the second interview through a proxy, making a total of 83.0 percent for whom second interviews were conducted (Table 7). Another 7.6 percent were alive but were not interviewed

Table 7: Follow-up Status of Study Group Eight Months after Discharge: Percent Distribution by ADL Status at Discharge and Use of Hospital in 12 Months Prior to Study

Follow-Up Status at Eight Months	All Patients†	Without ADL Disability*		With ADL Disability*	
		No Prior Hospital Admission	One or More Prior Hospital Admissions	No Prior Hospital Admission	One or More Prior Hospital Admissions
Total with first home interview					
Number	737	218	152	172	187
Percent	100.0	100.0	100.0	100.0	100.0
Alive and reinterviewed	83.0	89.4	86.2	80.2	76.5
Patient respondent	78.0	83.9	81.6	75.5	71.2
Proxy respondent	5.0	5.5	4.6	4.7	5.3
Alive, not reinterviewed	7.6	6.0	6.6	8.1	9.1
Died	9.4	4.6	7.2	11.6	14.4
Alive with a nursing home admission between first and second interviews‡	4.9	3.2	5.3	4.1	7.0
Alive with one or more hospital admissions between first and second interviews‡	28.6	26.6	41.4	20.9	27.3

*Disability defined as B–G on the ADL scale. See Table 2 for detailed definitions.

†Includes patients with unknown ADL status at discharge.

‡Information for both reinterviewed and not reinterviewed patients.

because they had entered a nursing home (19 patients), had moved out of the area (17), had refused a second interview (17), or were back in the hospital when their second interview would have occurred (3). Of the original 737 patients, 9.4 percent had died within the eight months after discharge from the hospital.

Mortality was significantly higher among those patients with ADL disability at discharge than among those without such disability, as shown in Table 7. In order to investigate other determinants of posthospital status, patients were also classified according to their history of hospital use in the year prior to study entry. It can be seen that in each ADL group, a higher percentage of those with a prior hospitalization than of those without a prior hospitalization had died in the eight-month period, but those differences were not statistically significant (at the 5 percent level based on a test for the difference between two proportions).

The percentage of patients admitted to a nursing home between the time of the first and second interviews was not significantly different either between those with and without an ADL disability at discharge, or between those with and without a prior hospital admission.

Hospital use during the follow-up period, however, did appear to be associated with prior hospital use. The risk of this subsequent hospital admission was greater within groups both with and without ADL disability when there was a hospital admission in the year before study entry than when there was not. While the differences were consistent, only the difference for patients without ADL disability at discharge was statistically significant.

Support for considering prior hospitalization as a predictor of return to the hospital is found in data from the Medicare Continuous List Sub-Sample. In this sample, among U.S. Medicare enrollees with a hospital discharge in 1978, the occurrence of another hospital admission within 12 months of the first one in 1978 was more likely for those with one admission or more in the prior year than for those with none. This difference was observed in all age groups over 65.

In order to give administrators and service providers an overall estimate of the expected status one year after discharge of patients going home, we adjusted the study data, as we had earlier, to the functioning status distribution of the prestudy sample, and projected the eight-month findings to an annual basis. In estimating subsequent hospital use, we assumed that two-thirds of the patient deaths occurred in hospitals since, in 1979, 62 percent of all U.S. deaths over 65 years of age and 75 percent of those over 75 occurred in hospitals or medical centers (National Center for Health Statistics 1984). These adjustments led to the estimate that in the study area about 9 percent of the elderly patients discharged to their homes would have died within a year of discharge, about 7 percent would have had a nursing home admission, and 54 percent would have had at least one subsequent hospital admission.

These percentage figures should not be confused with customary hospital discharge statistics. For example, in the case of nursing home admissions, it should be recalled that in the study hospitals in 1982, 11 percent of Medicare patients were discharged directly to nursing homes and those going to their own homes represented 80 percent of the total. Using the study estimate of *subsequent* nursing home admissions, one could calculate that a total of about 17 percent ($.11 + .80 \times .07$) of all hospitalized elders 70 years or older would have been admitted to a nursing home within one year.

RELATIVE IMPORTANCE OF PREDICTOR VARIABLES

For quantification of the relative importance on outcome of age, disability, prior hospitalization, and living arrangements, we analyzed the data for patients with two complete home interviews using the log-linear regression model described by Kleinman and Kopstein (1981). Model fitting was carried out using the SPSS × 2 program called Hiloglinear. The process drops out statistically insignificant terms and retains those that significantly improve the goodness of fit of the model as measured by chi-square. Finally, the effect on the dependent variable is expressed as an odds ratio.

The results of four separate analyses are given in Table 8. Dependent outcome variables were, respectively, independence in basic ADLs eight months after discharge, independence in housekeeping activities, also at eight months, and one or more subsequent hospital admissions between first and second interviews. Independent variables were classified as follows:

- Age: 70–79 years; 80 or older
- ADL prior to study hospitalization: A, or independent; not A, or getting help
- Prior hospitalization: one or more admissions in the 12 months prior to the study; no admission in that time
- Living arrangements at first home interview: living alone; living with others.

The most striking effect in Table 8 is that of prehospital ADL function on ADL function at second interview eight months later. Patients with no ADL disability before their hospital illness were 7.35 times as likely to be without ADL disability later on as were those who had help with ADL functions before the study hospitalization. Following down the table, patients with a prior hospitalization were only half as likely to be ADL independent later on as were those with no hospital admission in the year prior to the study. The odds ratio for those who lived alone compared with those living with others depended on the age of the patients. Among those 80 or older, patients living alone were 2.38 times as likely to remain independent in ADL as were those living with others. For the group age 70–79, there was little difference in the effect of the living arrangements variable on subsequent ADL function.

When the dependent variable was performance of housekeeping activities without help, each of the four "predictor" variables had a

Table 8: Effects of Particular Variables on Subsequent Hospitalization and Functioning Status* — Effects Expressed as Odds Ratios

Dependent Variable	*Comparison Variables*†	*Interacting Variables*†	*Odds Ratios*
1. Without ADL Disability eight months after index hospitalization	No ADL disability prehospital *vs* ADL disability prehospital	—	7.35
	Prior hospitalization *vs* no prior hospitalization	—	0.56
	Lives alone *vs* lives with others	70–79 years	1.04
		80 + years	2.38
2. Without housekeeping help eight months after index hospitalization	No ADL disability prehospitalization *vs* ADL disability prehosp.	—	2.39
	Prior hospitalization *vs* no prior hosp.	—	0.61
	Someone at home to help *vs* no one at home to help	—	0.20
	80+ *vs* 70–79 years	—	0.63
3. Subsequent hospitalization (at least one admission within eight months after index hospitalization)	Prior hospitalization *vs* no prior hospitalization	70–79 years	2.45
		80+ years	1.10
4. Subsequent hospitalization (as above)	Prior hospitalization *vs* no prior hospitalization	Lives alone	3.37
		Lives with others	1.50

*See Table 2 for definition of functioning status.

†Four independent variables were used in analyses 1 and 2. They appear in the table as either "comparison" or "interacting" variables. In analysis 3, independent variables were prior hospitalization, age, and prehospital ADL function. In analysis 4, independent variables were prior hospitalization, living situation, and prehospital ADL function. Prehospital ADL function does not appear in the table for analyses 3 and 4, because in neither case did it have a significant effect on subsequent hospitalization.

statistically significant effect. As expected, the ADL-independent group was 2.39 times as likely to be functioning without housekeeping help as was the ADL-dependent group. What may be surprising is that the difference was not greater. This could be because, in this elderly population, "dependency" — the use of help in day-to-day activities of shopping, laundry, cleaning, etc. — comes about for social reasons as well as for reasons of physical disability. Responses to interview questions indicated that in households of more than one person, housekeep-

ing tasks were generally participated in by all members, both males and females.

The notion of dependency as sharing in housekeeping activities in some households is supported by further data in Table 8. In the analysis of which patients were likely to be getting housekeeping help at the follow-up interview we modified the "living arrangements" variable to distinguish those who had someone at home "most of the day" from others who either lived alone or lived with adults not usually available to help with routine activities. Those with someone at home were only one-fifth as likely to perform housekeeping activities without help as were others. Conversely, those with no one at home to help were five times as likely (the reciprocal of .20, or 5.0) to be independent in housekeeping activities as were those with help available in the household.

Looking at subsequent hospitalization as an outcome, two analyses were done: one, considering ADL function, prior hospitalization, and age; and the other, ADL function, prior hospitalization, and living arrangements. In neither case did prehospital ADL function have a significant effect on subsequent hospitalization, so the variable is not shown in Table 8. Among the other variables, there were significant interaction effects. For example, in patients 70–79 years of age, a prior hospitalization was associated with a 2.45 times increase in the odds of a subsequent hospital admission, while in the older group (80 and over), the effect of prior hospitalization was small. In the last example in the table, it is seen that for patients living alone, prior hospitalization increased the odds of subsequent hospitalization by 3.37 to 1; for those living with others, the increase was 1.50 to 1.

It must be remembered that the patients described in the log-linear analyses of predictor variables represent the hardiest of those included in the study. They not only survived the hospital illness but were able to take up living in their own homes, and the vast majority were able to continue in the same arrangements for at least another eight months; 92 percent had the same living situation eight months after discharge that they had prior to study entry. It is of some interest, therefore, that the importance of prehospital ADL function for ADL function eight months later and the importance of prior hospitalization for subsequent hospitalization, observed in the total study sample, also held true for this subsample of patients with relatively good outcomes.

DISCUSSION

This study of elderly people discharged from acute care hospitals to suburban Illinois communities was undertaken in order to obtain baseline information about the help needed and received in the postdischarge period, and to identify areas for improvement in the operation of the service network. This subgroup of elders was considered important because of its numbers (25–30 percent of persons over 65 years of age have at least one hospital admission in a given year) and also because of the high risk of debility assumed to be associated with an episode of hospitalized illness. The assumption of high risk appears to have been justified. Based on judgments of hospital personnel, 62 percent of the selected study sample and an estimated 40 percent of all patients being discharged to their homes at age 70 or over were functioning at levels of dependency that would necessitate getting help with personal care or housekeeping activities, or both. In fact, two weeks after returning home, from 22 to 51 percent of the sample—depending on the disability status at discharge—were getting help with personal care, and 87 percent were getting help with housekeeping.

That these percentages represented increased use of help in the immediate posthospital period as compared with the prehospital period was expected; one would have been surprised otherwise. The persistence of the increase up to eight months afterward has additional implications for policy and planning, however, particularly since the increase with paid helpers was greater than the increase with unpaid helpers. It appears that among the elderly population the event of hospitalization, even for those able to return to their own homes, may precipitate a change in use from informal to formal services.

IMPLICATIONS FOR DISCHARGE PLANNING

The role of discharge planning in easing the transition of patients from one environment to another has been recognized for decades, and its benefits for continuity of care and cost effectiveness have been documented in numerous studies (McKeehan 1981). Data from this study raise questions that continue to be important for practical application of the concept, particularly in view of decreasing lengths of hospital stay of the elderly.

The rules governing which patients in the hospital are to be considered for discharge planning should be reviewed in light of the evidence. In our experience, the criteria are frequently expressed as "over 70 and living alone, or with specified diagnoses." Yet the data show that

among elderly patients being discharged to their homes (the majority of elderly patients), the ADL function is more critical for discharge planning than is age alone or age in combination with living arrangements. Prehospital and discharge functioning-status information, in standard terminology, should be obtained and included in the hospital records of all elderly patients as an aid in arranging for the continuing care needed after they return home.

The finding that history of hospitalization in the year prior to the study identified a group of elderly patients at higher risk than others of either early death or subsequent hospital admission in the eight months after returning to their own homes indicates that this is also an item of information that should be systematically ascertained on admission and taken into consideration by discharge planners.

We noted that fewer than one-third of the study patients who were judged to need help with personal care were referred for any type of in-home service at the time of discharge. The percentage was only slightly higher than this for patients needing personal care and living alone. If the percentage of referrals represents only a fraction of the discharge planning activity in the hospital, one would like to know why more referrals were not made and whether or not a discussion of plans took place between hospital and patient or hospital and family caretaker.

Administrative arrangements for discharge planning varied among the participating hospitals. It would be of considerable interest to know the effect of these different arrangements on discharge planning decisions and on subsequent patient outcomes. Such an inquiry, which would require larger numbers than were available, was judged to be beyond the scope of this study. Patients of *all* hospitals, however, were asked during the first home interview if anyone at the hospital had talked to them about how they would be able to manage at home. In 63 percent of the interviews the answer was that no one had talked to them about this. Even among patients with an ADL disability at time of discharge, 60 percent reported the absence of such communication. Although allowance has to be made for faulty memories, the figures suggest a lack of *effective* communication. Taken together with the finding that a considerable number of the study patients did not know about services available to them in their communities (from 23 percent for home-delivered meals to 72 percent for housekeeping/chore services), the data point to a need for greater effort in communicating with patients and families about how their posthospital needs might be met.

Hospitals interested in improving the assessment of patients for discharge planning now have considerable experience to draw on

(Kane and Kane 1981; Health Care Financing Administration 1978). The format and design of patient records containing assessment and planning information can facilitate the process as well as ease the burden of paperwork (Eisenberg and Amerman 1985). The three-hospital demonstration project of the Westchester Long Term Care Assessment Program provides a model for implementation of comprehensive patient assessment in the day-to-day operation of acute care hospitals (Hamill and Ryan 1985; W. K. Kellogg Foundation 1987).

IMPLICATIONS FOR SERVICE DELIVERY IN THE COMMUNITY

Clearly a productive case-finding source for elder-service agencies is the hospital discharge setting. The data from this study provide confirmation of the importance of attention by such agencies to elderly people returning home after an episode of hospitalization.

Shared assessment information is a necessary means of communication between hospital discharge planner and community service provider, whether formal or informal. The same information that alerts hospital personnel to patients who are likely to need posthospital help also informs the community service provider about postacute needs of the patient and the likelihood of a longer-term need for care. The transfer of standardized discharge assessment information with every hospital-to-community referral can promote continuing care for patients going from one setting to another.

When posthospital help is to be provided by family or friends, as was the case with the majority of the Cook County and Lake County patients, one has to question the locus of responsibility for whatever instruction is needed for these informal helpers and for their continuing support, verbal or otherwise, over time. NSC and the other projects for health-impaired elderly include strengthening the natural support system as one of their goals; but the means of implementing the goal, or of financing the means if defined, are far from clear.

Another aspect of the issue of responsibility is that of monitoring the change in patients' status over time. If resources are to be matched to *changing* needs, service providers must assume responsibility for seeing that assessment of their patients or clients is a continuing process and not a one-time-only operation. Similarly, oversight agencies in the community, such as area agencies on aging, should be concerned with helping providers carry out their responsibilities in this regard.

IMPLICATIONS FOR LONG-TERM CARE DATA SYSTEMS

Effective communication has been noted as a prerequisite for improved continuing care of hospitalized elderly patients. This requires comprehensive assessment of patients' functioning status in addition to pertinent medical and demographic data. Communitywide agreement on assessment terminology and reporting procedures would make it possible to address questions about community-based long-term care for which currently available data are inadequate. We do not know, on a communitywide basis, for example, the characteristics of those who are referred for long-term care at discharge compared with those who are not; or the processes through which these decisions are made, whether or not the referrals result in service delivery, what proportion are rehospitalized within given time periods, and the factors related to rehospitalization. These are some of the questions that have practical implications for issues of cost and quality of PPS or any other reimbursement system, and that are therefore important issues for hospitals, service agencies, consumers, and official regulatory bodies to address.

For the information to be forthcoming, in addition to the requirements of agreed-upon terminology and procedures, there must also be an agency with the authority (bestowed voluntarily or by mandate) to collect the information and analyze it. It is not yet clear where such authority should be vested. Probably there is no single solution that would fit all situations. In Cook County, Illinois, the NSC project, incorporated as a freestanding nonprofit coordinating agency, with the goal of improving the delivery of services to the health-impaired elderly, has made a beginning in the collection and interpretation of communitywide patient/client assessment information. This study of patients discharged from acute care hospitals has indicated directions in which the program should move to improve the continuing care of hospitalized elders. Many of these directions apply to the total population of elders in need of community services.

Irrespective of where the authority for the development of more effective long-term care information at the community level is lodged, such information is a necessity if coordination among the many parts of the service structure is to improve.

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