

Impact of Hospital Discharge Planning on Meeting Patient Needs after Returning Home

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This study examines the contribution of hospital discharge planning in meeting the needs of patients for care after their return home. A random sample of 919 admissions (age 60 and over) to five hospitals was studied to obtain information on characteristics of discharge planning during the patients' hospital stay. Specifically, information was obtained on the involvement of a designated professional for managing and coordinating the discharge plan, and the extent to which the planning was interdisciplinary. Patient interviews conducted two weeks after discharge provided information on needs for care related to: (1) treatment, (2) activity limitations, and (3) other self-sufficiency limitations. Patients were asked about their need for care in these three areas and about whether or not these needs were being met. Overall, 97 percent reported one or more needs for care and 33 percent reported that at least one of these needs was not being met. Findings show that the involvement of a discharge planning case manager is related to a significant

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reduction in unmet treatment needs, but not to reductions in activity limitation, other self-sufficiency needs, or overall needs. No significant effects of interdisciplinary planning were identified. These findings suggest that treatment-related benefits result when a case manager has specific responsibility for the discharge planning of elderly patients returning home after hospitalization. These results provide insights into what is being achieved through current discharge planning practices. The meeting of specific patient needs through enhanced discharge planning may save future costs by reducing the rates of complications and hospital readmissions in an era of prospective payment, thus potentially offsetting the increased costs involved in planning and coordinating postdischarge care for older adults.

Discharge planning is required and provided to all patients according to the guidelines of the Joint Commission on Accreditation of Health Care Organizations. It is viewed as the main method for ensuring that patients' needs postdischarge will be met to enable them to function at optimal levels once they return home (American Hospital Association 1984; Joint Commission on Accreditation of Hospitals 1983). Considerable information exists on different approaches to discharge planning (American Nurses' Association 1975; Hartigan and Brown 1985; McKeehan 1981; Reichelt and Newcomb 1980; Society for Hospital Social Work Directors 1978), but relatively few studies have evaluated the impact of the approaches on postdischarge care and patient outcomes. Since all patients receive discharge planning, the question is: What discharge planning strategies produce measurable benefits, and for which types of patients?

Concerns with the adequacy of discharge planning were raised by the introduction in 1984 of the Medicare prospective payment system (PPS) using diagnosis-related groups (DRGs). A substantial decline in average length of hospital stay occurred; between 1982 and 1985, average length of stay declined by 8 percent; among the elderly, it was 14 percent (National Center for Health Statistics 1987). The substantial declines in length of stay for older adult patients sharpened concerns about the adequacy of discharge planning to prepare them for returning home. Shorter stays meant less time to educate the patient and family members about providing home care for patient needs, and less time to coordinate services from home health and community agencies. It was also perceived that patients might be discharged home with a higher level of dependency than had been the case previously, resulting in an increased level of home care requirements (Hartigan and Brown 1985; Brook and Lohr 1987; Neu and Harrison 1988). There is also

concern that inadequacies in discharge planning, especially under the current cost-containment policies, may contribute to higher readmission rates, which may not only negate any cost savings from shorter stays but may also have detrimental effects on the health of patients. This study was designed to examine the contribution of differing discharge planning strategies in meeting the home care needs of patients after hospital discharge. The effects of discharge planning upon meeting patient home care needs become increasingly important given earlier results of this study (Steinwachs 1989), which found that patients with unmet needs had significantly higher rates of poorer outcomes, that is, overall complications within two to four weeks postdischarge and hospital readmission rates within three months of discharge. Of those patients with unmet needs, 49 percent experienced one or more complications (i.e., death, related rehospitalization, emergency room visit, unplanned physician visit, or physician contact via telephone for a related problem) in contrast to 34 percent with complications when all patient needs were met. A 10 percent difference was found in unplanned but related rehospitalizations between those patients whose home care needs were met compared to those whose needs were unmet (15 percent and 25 percent, respectively).

Discharge planning is conceptualized as having four phases: (1) patient assessment; (2) development of a discharge plan; (3) provision of services, including patient/family education and service referrals; and (4) follow-up/evaluation.¹ Although hospitals employ different types of discharge planning strategies in each of these phases, it is generally agreed that two factors in particular are important for meeting patient needs.

First, discharge planning is expected to be more effective if there is interdisciplinary input in planning the patient's home care (American Nurses' Association 1975; Hartigan and Brown 1985; McKeehan 1981; Society for Hospital Social Work Directors 1978; Lowe and Herranen 1981; Shine 1983). The advantage of involving multiple disciplines in a team effort is that the expertise of each discipline is brought to bear on identifying and meeting the patient's home care needs. Through such professional interaction, the patient's needs can be identified more readily, and adequate and appropriate referrals and services can then be coordinated and executed in a timely manner. Second, the usefulness of a designated professional—that is, a case manager, who assumes primary responsibility for coordinating the discharge plan with other providers—has also been emphasized (Hartigan and Brown 1985; McKeehan 1981; Shreiber 1981; Wilson 1981). It is viewed that such a case manager, with established community linkages

to various services and specific knowledge of the complicated reimbursement requirements, can act more efficiently to implement the aftercare services.

In this article, the involvement of the hospital's discharge planning staff—a social worker (SW) or a registered nurse (RN) located within the social work department—is referred to as “formal” case manager discharge planning; this is in contrast to “usual” discharge planning (that provided by the attending physician and nurses on the inpatient unit). We examine whether patients who receive formal and interdisciplinary discharge planning are or are not more likely to have their home care needs met, when compared to patients of similar age who receive the usual planning. The purpose of this article is to evaluate these two discharge planning strategies in terms of the extent to which patient-reported home care needs are met. In so doing, we examine the extent to which improvements in hospital discharge planning might be expected to substantially reduce the occurrence of unmet needs.

METHODS

This study of discharge planning invited the participation of a random sample of medical and surgical patients admitted to five Baltimore area hospitals. The study was designed to develop information on a representative cross section of admissions, age 60 and over, and to follow these patients through their hospitalization and back into the community, with interviews at two weeks and three months postdischarge. Patients were entered into the study over the period March through July 1986. Follow-up interviews extended through October 1986.

CHARACTERISTICS OF PARTICIPATING HOSPITALS

The five Baltimore area hospitals participating in the study provide a representative mix of medium-size to large hospitals (400–700 beds), with patients drawn from a wide range of socioeconomic backgrounds. Two of the hospitals are major teaching institutions, and three have large outpatient departments with both general and specialty clinics. All five hospitals have social work departments with primary responsibility for discharge planning. These departments concentrate their efforts on patients with markedly complex needs and limited resources, including financial and caregiver resources. All of the departments work with nurses on the patient units to develop and implement discharge plans. Two hospitals have nurses as well as social workers on the

staff of the social work department. Discharge planning policies differ among the five hospitals regarding the division of responsibility between patient units and the social work department, and in terms of the level of multidisciplinary involvement.

SELECTION OF STUDY SAMPLE

It was recognized that it would be important to oversample patients at relatively high risk of having postdischarge needs for care and unmet needs, so the sampling ratios provided for equal numbers of patients ages 60–74 and ages 75 and over. The lower bound of 60 years was used so that the sample would include persons without Medicare coverage, thus permitting an examination of the effect of insurance coverage. Exclusions from the study included:

- Patients with hospital stays of three days or less, since they were considered to be at substantially lower risk;
- Individuals staying over 30 days, in order to limit the follow-up period; and
- All individuals not discharged home (e.g., those transferred to nursing homes or other institutions, or dying in the hospital).

Patients were sampled randomly at admission over a three- to four-month period; sampling ratios varied by hospital and age group, ranging from approximately one in four to one in two. Overall, 80 percent of those sampled and approached for informed consent agreed to participate in the study. Among the 20 percent not participating, 16 percent refused and, for the remaining 4 percent, it was not possible to obtain either an acceptance or a refusal. Hospital staff were not informed of the identity of the patients who would actually be in the study; staff were told that a patient had been randomly selected shortly after the patient's discharge. The final sample size was 1,100, averaging 200 patients per hospital.

DATA COLLECTION

Information from multiple sources was obtained for each patient. This section describes the sources and types of data collected and used in this analysis.

Discharge Planner Questionnaire. After discharge, a questionnaire for each sampled patient was completed by the appropriate staff member in the social work department (RN or SW). Information was recorded indicating if a patient assessment had been done and whether or not a

case had been opened. For the 1,100 sampled patients, 98 percent of the questionnaires had been completed regarding whether a case had been opened or not. When a case was opened, the following information was collected: the provider's assessment of patient needs, involvement of the patient and primary caregiver in the discharge plan, the type of patient/family education provided and whether referrals were made, and an assessment of the plan's adequacy and likelihood of success. Overall, 21 percent had a social work case opened and were considered to be formal discharge planning cases. The remaining 79 percent were classified as usual discharge planning cases where no case manager was identified. In the latter situation, nurses on the units were coordinating the discharge plan with the attending physician and other involved professional staff. Hospitals varied from 11 percent to 33 percent in the number of formal cases opened; these differences reflect the fact that some hospitals were more proactive in case finding and used more inclusive criteria.

Nursing Questionnaire. The nursing questionnaire provided complementary information regarding the assessment of patient needs by nursing and the discharge planning services that nursing provided (e.g., patient/family education and referrals). Nursing questionnaires were completed for 86 percent of the sampled cases. Information from the nursing questionnaire was used to quantify interdisciplinary involvement. A variable was created that counted the number of different categories of providers reported to have been involved in the planning, including the patient's physician (60 percent of the cases); social worker (37 percent)²; psychiatric liaison nurse (1 percent); clinical nurse specialist (e.g., ostomy RN: 5 percent); other hospital staff (e.g., nutritionist, or physical or speech therapists: 31 percent); hospital-affiliated liaison nurse (24 percent); and other-agency nurse liaison (2 percent). In 14 percent of the cases only the nurse was involved, and in 16 percent the involvement of others was unknown. If three or fewer categories were checked, the interdisciplinary involvement was considered to be low; four through eight checked categories was considered high interdisciplinary involvement.

Medical Record Abstracts. Two sets of information were derived from the medical records. First to be determined were the extent to which the admission met criteria for appropriateness, using the Appropriateness Evaluation Protocol (Gertman and Restuccia 1981), and the appropriateness of each day of the stay. Second, the Illness Severity Score (Horn, Sharkey, and Bertram 1983) was calculated by abstractors specifically trained in the method. Medical records were abstracted for 97 percent of the study patients.

Hospital Discharge Abstracts. These data, obtained from the Maryland Health Services Cost Review Commission, included principal and secondary discharge diagnoses, primary and secondary procedures performed, demographic characteristics, discharge status, and length of stay. It was possible to match 96 percent of the patients with their abstracts.

Two-Week Telephone Interview. Each study participant was contacted at two weeks postdischarge to take part in a telephone interview that would last about 45 minutes. Generally, the actual interviews took place two to four weeks after discharge, averaging 21 days. Complete interviews were obtained for 84 percent of patients ($N = 919$), either from the patient him/herself, or from a proxy (usually a spouse or other relative). Proxy respondents were used in 30 percent of the interviews. In a small number of cases (2 percent), in-person interviews at home were required. The two-week structured interview was divided into several sections, including measures indicating the resources available to the patient, patient-reported needs for care after discharge, and whether the needs were met or unmet. Information was obtained on living arrangements before and after the hospitalization, the presence of a caregiver (family member or friend), the extent of social support, insurance coverage, income, type of usual source for medical care, and use of health services postdischarge.

Questions were asked about specific treatment needs; activities of daily living (ADL) needs, and other self-sufficiency needs, including transportation, housing, legal, and financial needs. Three approaches were used to identify any need for care that had been present at discharge, and whether the need was being met. In a number of categories, need was assessed by asking questions regarding whether a specific category of service had been received since discharge (e.g., nursing care, physical therapy) and, if not, whether the patient would have benefited from having received this category of service. Positive responses to either of the two questions identified those with a reported need, and a positive response to the second question identified those with an unmet need. For some items, a need was defined if the patient reported receiving specific instructions (e.g., new medications, dietary instructions) and the need was termed unmet if the patient reported having difficulty with the instructions or being unable to comply. The third method for measuring needs was to determine whether patients were unable to carry out activities necessary for daily living in the home, or were able to do so only with assistance, equipment, or both. They were asked whether additional equipment or assistance had been

needed since discharge and whether or not it had been obtained (i.e., whether or not the need had been met).

APPROACH TO THE ANALYSIS

For purposes of this analysis, the sample includes 919 patients who completed the entire two-week telephone interview. Statistical significance is measured using the chi-square test for bivariate comparisons. Regression models have zero-one dependent measures and have been estimated using least squares. The robustness of the models has been tested by replicating the analysis using a logistic model. All tests of significance are based on a probability of rejecting the null hypothesis when it is true of $p < .05$.

RESULTS

PATIENT-REPORTED MET AND UNMET NEEDS FOR CARE AFTER DISCHARGE

Patient-reported needs for care after discharge have been divided into three categories: (1) treatment-related needs; (2) activity-related needs, that is, needs for assistance or equipment as a result of limitations in physical capabilities that reduce daily functioning in the home; and (3) needs related to other aspects of self-sufficiency. At the two-week interview (occurring, on average, three weeks postdischarge), 97 percent of all patients reported needs in one or more of these categories; 33 percent reported unmet needs in one or more of the categories (Table 1). These percentages remain the same if data are weighted to adjust the stratified sample for the actual age distribution of admissions.

Treatment-related needs are assessed using seven items: receipt of new medications, need for nursing care, urination or bowel problems, prescribed treatments and procedures, need for physical therapy (PT)/rehabilitation, and need for dietary instructions. As shown in Table 1, the percent of individuals with needs varies in each subcategory, as does the extent of unmet need. Of note is that the percent with unmet needs shown represents the proportion of the total sample and is not a percentage of those having the need. For example, 48 percent report a need for nursing care; 8 percent report that the need is not being met. This represents almost 17 percent of those reporting a nursing need. Similarly, 21 percent report a need for physical therapy or rehabilita-

Table 1: Proportion of Discharges with Needs for Aftercare and Proportion Reporting Needs Not Being Met

| <i>Category of Need</i> | <i>Percent Needing Care</i> | <i>Percent Need Not Being Met*</i> |
|---|-----------------------------|------------------------------------|
| <i>Total (N = 919)</i> | 97 | 33 |
| <i>Total Treatment</i> | 88 | 20 |
| New medications | 60 | 3 |
| Nursing care | 48 | 8 |
| Urination problems | 18 | 2 |
| Bowel problems | 14 | 1 |
| Treatments | 13 | † |
| Physical therapy/Rehabilitation | 21 | 9 |
| Diet | 41 | 3 |
| <i>Total Major and Instrumental Activities of Daily Living and Mobility</i> | 76 | |
| <i>Total: Additional equipment or assistance</i> | 62 | 11 |
| Additional equipment and assistance | 20 | 1 |
| Additional assistance | 41 | 10 |
| Additional equipment | 1 | † |
| <i>Total Other Self-Sufficiency</i> | 76 | 15 |
| Transportation | 70 | 6 |
| Financial | 20 | 7 |
| Home modifications | 12 | 4 |
| Housing and legal | 3 | 2 |

*Percentages based on N = 919.

†Indicates less than 0.5 percent.

tion, and 9 percent report that the need is not being met; this represents 43 percent of all those reporting a PT/rehabilitation need.

Needs related to limitations in activities of daily living include activities of daily living (ADL), instrumental activities (IADL), and mobility based on patient reports that these activities cannot be performed, or can be done but require assistance, equipment, or both. Five measures were included under activities of daily living. If the patient reported needing equipment or assistance, or being unable to carry on an activity, it was scored as a need present. The five ADL activities (percent with need) are bathing (49 percent), toileting (29 percent), dressing (22 percent), transferring (19 percent), and eating (7 percent). Five items were included under instrumental activities of daily living; these are shopping (66 percent), light housework (43 percent), preparation of meals (38 percent), management of money (24 percent), and use of telephone (14 percent). In addition, three mobility items were asked: ability to

climb stairs (49 percent), ability to get outside the home (46 percent), and ability to walk (38 percent). Since many of these needs might have been present at the time of admission, the patient was asked if there had been additional needs for assistance, equipment, or both, related to these activities. In Table 1, 76 percent responded that they had one or more needs, with 62 percent responding that they had additional needs since discharge. Eleven percent indicated that not all of these needs were being met; 10 percent needed additional personal assistance, 1 percent needed additional personal assistance and equipment.

Other self-sufficiency needs include transportation, finances, home modifications, and housing/legal problems. In Table 1, 76 percent of all of the patients reported having one or more of these four needs, with 15 percent having the need unmet three weeks after being discharged from the hospital. Seventy percent reported a transportation need but only 6 percent reported that it was not met. The three remaining categories have lower percentages with need, but a relatively higher proportion indicated that such needs were unmet. Approximately two out of three individuals reporting housing/legal problems indicated that their needs were not being met.

RELATIONSHIP OF UNMET NEEDS TO COMPLICATIONS AND READMISSIONS

If patient-reported unmet needs for care have importance beyond the patient's perception, one can expect to find a relationship to indicators of adverse health outcomes. As discussed previously, earlier results of this study (Steinwachs 1989) have shown that patients with unmet treatment needs are more likely ($p < .10$) to be experiencing complications three weeks postdischarge, and those with unmet activity needs are more likely ($p < .05$) to be rehospitalized within three months postdischarge. These differences in rates of complications and rehospitalizations between those with met and those with unmet needs is of particular relevance in applying measures of unmet needs to an evaluation of the effectiveness of discharge planning.

PATIENT CHARACTERISTICS RELATED TO DISCHARGE PLANNING

All of the hospitals participating in this study used criteria for screening admissions to identify those at increased risk of needing more intensive and coordinated discharge planning; the criteria included age (usually those 75 and older), living alone, inadequate health insurance or financial resources, and a major disabling problem (e.g., hip fracture). In

this study it was possible to examine a range of additional patient characteristics to assess the extent to which patients were receiving formal (case manager) and interdisciplinary discharge planning (Table 2). Results show statistically significant relationships for age, sex, and living arrangements. Results also show that the proportion of patients with formal case-managed discharge planning increases with age and is higher among females and those not living with their spouse (i.e., living alone or with a relative or friend). Reliance on a caregiver at admission is not related to receipt of formal discharge planning. Similarly, insurance coverage is not significantly related to receipt of formal discharge planning, although there appears to be a trend toward higher proportions of formal discharge planning among those patients having Medicare insurance only or in combination with Medicaid.³ A similar trend appears in the relationship between type of usual source of care and receipt of formal discharge planning. The distribution is in the anticipated direction (i.e., with those not having a hospital outpatient department physician as their usual source of care more likely to receive formal discharge planning), but it is not statistically significant. In terms of interdisciplinary discharge planning, no significant relationships with patient characteristics are noted except that of race, where multiple disciplines are more likely to be involved if the patient is black.

CHARACTERISTICS OF HOSPITAL STAY RELATED TO DISCHARGE PLANNING

The relationships between hospitalization characteristics and case-managed or interdisciplinary discharge planning strategies are examined in Table 3. Severity of illness, length of hospitalization, and one or more inappropriate days of stay show the strongest relationships to receipt of formal discharge planning. These measures indicate that the more severe the case, the more likely a formal case manager will be involved in planning for posthospitalization care. Statistically significant differences also appear for receipt of formal discharge planning and for category of primary diagnosis. Patients with injuries or endocrine problems are more likely to have a case manager involved, whereas patients having digestive/genitourinary problems are significantly less likely to have a formal case manager involved in planning their home care. In terms of interdisciplinary discharge planning, the longer the length of stay, the greater the likelihood of high interdisciplinary planning ($p < .05$). Further, patients with diagnoses of neoplasms are more likely to have high interdisciplinary planning, whereas

Table 2: Patient Characteristics at Admission and Their Relationship to Discharge Planning Strategies

| Characteristics | Percent Cases | Percent | | | | |
|--------------------------------|---------------|---------|-------|-------------------|-----|---------|
| | | Formal | Usual | Interdisciplinary | | |
| | | | | High | Low | Unknown |
| Total (N = 919) | 100 | 21 | 79 | 36 | 48 | 16 |
| <i>Age</i> | | | | | | |
| 60-64 | 15 | 17 | 83* | 33 | 50 | 17 |
| 64-74 | 37 | 13 | 87 | 35 | 50 | 15 |
| 75-84 | 40 | 27 | 73 | 38 | 44 | 18 |
| 85+ | 8 | 40 | 60 | 33 | 56 | 11 |
| (N) | | (898) | | (919) | | |
| <i>Sex</i> | | | | | | |
| Female | 52 | 26 | 74* | 34 | 48 | 18 |
| Male | 48 | 16 | 84 | 37 | 48 | 15 |
| (N) | | (898) | | (919) | | |
| <i>Race</i> | | | | | | |
| Black | 21 | 26 | 74 | 42 | 39 | 19* |
| White and other | 79 | 20 | 80 | 33 | 51 | 15 |
| (N) | | (865) | | (884) | | |
| <i>Living Arrangements</i> | | | | | | |
| Spouse | 47 | 14 | 86* | 35 | 51 | 14 |
| Alone | 26 | 30 | 70 | 34 | 46 | 20 |
| Relative/Friend | 27 | 27 | 73 | 38 | 45 | 17 |
| (N) | | (897) | | (918) | | |
| <i>Rely on Caregiver</i> | | | | | | |
| Yes | 51 | 23 | 77 | 38 | 47 | 15 |
| No | 49 | 19 | 81 | 33 | 49 | 18 |
| (N) | | (896) | | (917) | | |
| <i>Insurance Coverage</i> | | | | | | |
| Medicare + private | 66 | 20 | 80 | 36 | 50 | 14 |
| Medicare only | 13 | 26 | 74 | 33 | 44 | 23 |
| Medicare + Medicaid | 7 | 28 | 72 | 33 | 41 | 25 |
| Other | 14 | 20 | 80 | 36 | 45 | 19 |
| (N) | | (873) | | (893) | | |
| <i>Usual Source of Care</i> | | | | | | |
| Private physician | 72 | 20 | 80 | 35 | 49 | 16 |
| Outpatient department or other | 24 | 25 | 75 | 34 | 48 | 18 |
| None | 4 | 17 | 83 | 42 | 47 | 11 |
| (N) | | (886) | | (905) | | |

*Significant at $p < .05$.

Table 3: Hospitalization Characteristics and Their Relationship to Discharge Planning Strategies

| Characteristics | Percent Cases | Percent | | | | |
|------------------------------------|---------------|---------|-------|-------------------|-----|---------|
| | | Formal | Usual | Interdisciplinary | | |
| | | | | High | Low | Unknown |
| Total (N = 919) | 100 | 21 | 79 | 36 | 48 | 16 |
| <i>Type of Admission</i> | | | | | | |
| Elective | 23 | 16 | 84 | 36 | 51 | 13 |
| Urgent/Emergent (N) | 77 | 23 | 77 | 35 | 48 | 17 |
| | | (866) | | (885) | | |
| <i>Admitting Physician</i> | | | | | | |
| Usual physician | 45 | 21 | 79 | 38 | 48 | 14 |
| Other (N) | 55 | 20 | 80 | 33 | 49 | 18 |
| | | (873) | | (892) | | |
| <i>Length of Hospitalization</i> | | | | | | |
| 4-6 days | 35 | 12 | 88* | 28 | 55 | 17* |
| 7-10 days | 31 | 19 | 81 | 34 | 48 | 18 |
| 11-30 days (N) | 34 | 34 | 66 | 44 | 42 | 14 |
| | | (898) | | (919) | | |
| <i>Surgery</i> | | | | | | |
| Yes | 48 | 19 | 81 | 36 | 48 | 16 |
| No (N) | 52 | 23 | 77 | 35 | 49 | 16 |
| | | (866) | | (885) | | |
| <i>Principal Diagnosis†</i> | | | | | | |
| Neoplasms | 11 | 25 | 75 | 50 | 36 | 14* |
| Endocrine | 4 | 48 | 52* | 28 | 56 | 16 |
| Circulatory | 37 | 19 | 81 | 29 | 50 | 21* |
| Respiratory | 7 | 17 | 83 | 33 | 50 | 17 |
| Digestive, genitourinary | 18 | 13 | 87* | 33 | 58 | 9* |
| Skin, musculoskeletal | 7 | 26 | 74 | 47 | 39 | 14 |
| Injuries | 6 | 37 | 63* | 39 | 43 | 18 |
| Other (N) | 11 | 23 | 77 | 40 | 47 | 13 |
| | | (866) | | (885) | | |
| <i>Severity of Illness</i> | | | | | | |
| Low (1) | 38 | 12 | 88* | 29 | 56 | 15* |
| Moderate (2) | 56 | 25 | 75 | 38 | 45 | 17 |
| High (3,4) (N) | 6 | 47 | 53 | 55 | 30 | 15 |
| | | (864) | | (883) | | |
| <i>Appropriateness of Stay</i> | | | | | | |
| All days judged appropriate | 89 | 20 | 80* | 34 | 49 | 17 |
| One or more days inappropriate (N) | 11 | 30 | 70 | 45 | 43 | 12 |
| | | (871) | | (890) | | |

*Significant at $p < .05$.

†Each diagnostic category is compared to all other diagnostic categories combined; this comparison group is within +2 percent of the total percentage distribution of 21 percent formal and 79 percent usual.

circulatory and digestive/genitourinary diagnoses are more likely to have low interdisciplinary planning ($p < .05$). Type of admission, having surgery, and whether or not the attending physician is the patient's usual source of care are not significantly related to either of the two major discharge planning strategies, that is, receiving formal or high interdisciplinary discharge planning.

RELATIONSHIP OF NEEDS, MET AND UNMET, TO DISCHARGE PLANNING STRATEGIES

If discharge planning has importance beyond screening for patients at higher risk, it can be expected that discharge planning strategies are related to met versus unmet needs. In order to determine the effectiveness of these strategies in meeting patient needs, it is necessary to control for both patient and hospital characteristics. The previous three sections have indicated that a selection process took place that determined who received enhanced discharge planning; that is, high-risk patients who were more difficult to treat were more likely to receive formal and high interdisciplinary discharge planning. To estimate the contribution of formal and high interdisciplinary discharge planning to meeting patient needs for aftercare, regression analyses were conducted for each of the four unmet-need measures.

The dependent variable is equal to one if an unmet need is reported, and zero if all needs are met. Each model includes independent variables describing patient characteristics at admission, characteristics of the hospitalization, level of need (i.e., number within each need area), and characteristics of discharge planning. After entering these variables, zero-one dummy variables for each hospital were entered to determine if unmeasured differences existed among hospitals. In none of the models related to unmet needs were any hospital differences found.

In Table 4, results are shown for the regression models for total needs, treatment needs, activities of daily living, and other self-sufficiency needs. These models indicate that when patient characteristics, hospital stay characteristics, and need for care are controlled for, the involvement of a formal discharge planner/case manager is significantly negatively related to unmet treatment needs; that is, having a formal case manager reduces having any unmet treatment needs. Formal discharge planning is not related to the other three unmet-need measures: overall needs, activity limitation, or other self-sufficiency needs. No significant effects of high interdisciplinary planning were identified.⁴

Table 4: Regression Model of the Relationship of Discharge Planning to Unmet Needs for Care after Discharge

| Independent Variables | Unmet Needs for Care | | | |
|-----------------------------------|----------------------|-----------|----------|----------|
| | Total | Treatment | Activity | Other |
| <i>Patient</i> | | | | |
| Age | -.007** | -.005* | -.001 | -.005** |
| Sex (female) | .003 | -.005 | .025 | -.060* |
| Race (white) | -.108** | -.056 | -.019 | -.125*** |
| Living arrangement | | | | |
| Alone | .037 | .014 | .003 | .071* |
| Spouse (reference) | | | | |
| Other | .022 | -.012 | .051 | -.022 |
| Caregiver | .049 | .043 | -.007 | .004 |
| Usual source (private) | -.043 | -.009 | .018 | -.033 |
| <i>Insurance</i> | | | | |
| Medigap (reference) | | | | |
| Medicare | .038 | .038 | .021 | -.032 |
| Medicaid + Medicare | .052 | -.026 | -.011 | .107* |
| Third party | -.048 | -.024 | -.037 | -.009 |
| Other | .078 | .160* | .043 | -.007 |
| <i>Hospitalization†</i> | | | | |
| Respiratory diagnosis | .129* | .098 | .066 | .075 |
| Injury | -.099 | -.117* | -.007 | -.036 |
| Admission (emergent) | -.060 | -.050 | -.036 | -.008 |
| Surgery (yes) | -.048 | -.041 | -.023 | .014 |
| Length of stay | -.006 | .001 | -.003 | -.006 |
| Severity | .016 | -.010 | -.011 | .014 |
| Inappropriate day | .029 | .030 | -.005 | -.006 |
| Hospital physician (usual source) | .020 | .037 | -.012 | .009 |
| <i>Need for Care</i> | | | | |
| Number of treatment needs | .081*** | .093*** | .046*** | .007 |
| Number of activity needs | .017*** | .005 | .017*** | .004 |
| Number of other needs | .157*** | .048** | .036** | .209*** |
| <i>Discharge Planning</i> | | | | |
| Type (formal) | -.012 | -.097** | .024 | .036 |
| Interdisciplinary | | | | |
| High | .000 | -.019 | -.006 | .000 |
| Low (reference) | | | | |
| Unknown | .081 | .036 | .026 | .010 |
| Constant | .559 | .374 | .048 | .410 |
| Total R ² | .299 | .202 | .192 | .297 |
| F | 10.51 | 6.25 | 5.86 | 10.38 |
| Significance | .00 | .00 | .00 | .00 |
| Number of cases 769 | | | | |

**p* < .05.

***p* < .01.

****p* < .001.

†Only the two principal diagnostic categories with significant findings are displayed. Diseases of the Circulatory System is the reference group.

Additionally, these analyses clearly indicate that the number of treatment, activity limitation, and other self-sufficiency needs are major and consistent predictors of the four unmet-needs measures (Table 4; see Need for Care results). All three are significantly related to having unmet needs for both total needs and activity limitation needs. In contrast, only treatment and other self-sufficiency needs are significantly related to having an unmet treatment need.

These multivariate analyses allow for further specification of the patient or hospital stay characteristics that are important predictors (and therefore risk factors) for having unmet needs. Increased age is a consistent predictor of having unmet needs (for all unmet-need measures except activity limitation). In contrast, living arrangement is predictive of having only an unmet self-sufficiency need. Similarly, sex and type of insurance are significantly related to the presence of a self-sufficiency unmet need. A woman is more likely to have such an unmet need; in contrast, an individual with both Medicare and Medicaid insurance coverage is more likely to have all other self-sufficiency needs met. Those in the "other" insurance category are significantly less likely to have an unmet treatment need. More striking is the lack of any significant relationship between hospital stay characteristics and the unmet-need measures when all other characteristics are held constant. It is worth noting that hospital characteristics comprise the second block in the regression analyses: when these variables were entered, even at this point in the analyses, none of the hospital stay characteristics was significantly related to the unmet-need measures. Estimation of these relationships using logistic and probit regression models produces similar results. However, on the probit regression sex is not significantly related to reducing other unmet needs.

DISCUSSION

Hospital professional staff have had a long-standing commitment to meet the continuing care needs of hospitalized patients discharged into the community: both to enhance a smooth transition from hospital to home and to ensure that the patient will function at an optimal level (given the constraints of the illness). Discharge planning has always been viewed as a major way to achieve this objective. The introduction of prospective payment systems (PPS) has brought increasing concern that patients, who may be leaving the hospital sooner, may therefore have increased home care needs. This study has addressed how elderly

hospitalized patients are faring postdischarge under PPS using DRGs, and the effects of the different discharge planning strategies currently employed on meeting patient-reported needs for care at home.

It is clear from analyses presented in this article that almost all patients 60 years of age and older leave the hospital with needs (97 percent) for aftercare. What is more important is that one-third of the studied population reported having an unmet home care need two-to-four weeks postdischarge; 20 percent had one or more unmet treatment needs, 11 percent had an unmet activity limitation need, and 15 percent had another type of self-sufficiency unmet need.

Given the emphasis placed on discharge planning to meet home care needs, the questions that naturally evolve from the foregoing analyses are: Does discharge planning make a difference and for whom? Are certain types of strategies effective and, if so, for which types of patients or patient needs? The analyses presented in this article show that of two major discharge planning strategies, formal case manager and interdisciplinary, only formal discharge planning appears to have a significant effect on reducing unmet treatment needs; that is, having a formal case manager reduces having any unmet treatment needs. The importance of formal discharge planning in reducing unmet treatment needs is increased by other analyses conducted by the authors (Steinwachs 1989), in which it was found that unmet treatment needs more likely tend ($p < .10$) to result in complications within two to four weeks postdischarge (unplanned physician visit or telephone contact, emergency room visit, hospitalization, or death) than other categories of unmet needs. Although the lack of relationships between discharge planning strategies and the other unmet needs is somewhat disconcerting, it does suggest what can and cannot be expected from discharge planning under the present health care delivery and reimbursement system. These findings indicate that formal case managers appear to be effective in meeting patient treatment needs, that is, in arranging home nursing care (covering nursing care, medication education, urination and bowel problems, and diet education) and physical therapy or rehabilitation services.

The multivariate analyses support the contention that efforts to meet activity limitation needs and other needs required for self-sufficiency raise a more complex issue. When all patient, hospital, and needs variables are included, it is clear that patient and hospitalization characteristics explain little of the unmet activity limitation need. With respect to other areas of self-sufficiency, patient characteristics including age, sex, race, living arrangements, and insurance coverage are

related to having an unmet self-sufficiency need (as well as to the number of self-sufficiency needs).

When one considers the findings of the Medicare PPS evaluation (Kosecoff, Kahn, Rogers, et al. 1990), it is time to examine ways to modify discharge planning factors associated with poorer outcomes and to assess the potential benefits of different types of planning. One reason why a formal case manager or high interdisciplinary involvement may not be significant factors in assuring that patient activity limitation or self-sufficiency needs are met is likely to be the patient's financial/insurance status. Services to meet activity limitation needs or other self-sufficiency needs, while considered important by professionals involved in discharge planning, are often not reimbursable (e.g., lack of Medicare coverage for personal care services or for transportation services). Consequently, patients may have to rely on informal caregivers, for example, family and friends (Jones, Densen, and Brown 1989).

This article identifies the effect that recognized and well-accepted discharge planning strategies have on unmet needs. It is time to rethink these aspects of patient discharges and to consider alternatives for closing the unmet-needs gap; this rethinking process, in turn, should have the potential for improving patient outcomes.

LIMITATIONS

Some caution is necessary regarding the results of this effort. This study is one of the first to attempt to examine the effect of discharge planning as it naturally occurs in the hospital setting. The literature on discharge planning is extensive; however, standardized and easily quantifiable measures of key attributes of discharge planning do not exist. As a result, the discharge planning measures used in this analysis were developed at the onset of this study to reflect concepts widely discussed in the literature by professionals involved in discharge planning. Given the state of the art, it is possible that the measures used in this study may not be sensitive enough to differentiate small effects, particularly those related to interdisciplinary planning. Another possible limitation is the setting. This study was conducted in a metropolitan area that included urban and suburban hospitals; the results may not be applicable for rural communities and rural hospitals.

CONCLUSION

The data presented in this article clearly indicate that although improvements in discharge planning may be beneficial, the practice

should not be viewed as a panacea assuring that patient home care needs are met. Given the high rates of unplanned rehospitalization, perhaps inpatient discharge planning is not enough. Perhaps the hospital's responsibility in coordinating home care services should continue for a period of time postdischarge in order to reduce the risk of poor outcomes. Another possibility would be to improve linkages and financial support for existing personal care, transportation, and other social services available in the community. Better coordination and access to community services appear to be needed. For example, Jones, Densen, and Brown (1989) found that fewer than one-third of those who needed personal care actually received a referral for personal care. In addition, they found that the proportion of those receiving help from relatives decreased over time, while the proportion receiving paid help increased. It appears that a combination of strategies will be necessary to close the unmet-needs gap. These strategies might include expansion of insurance coverage for continuing care, case management of high-risk cases, and specially funded community programs to provide services not currently available to high-risk groups identified in this study. Based on the findings of this study and others (Hedrick and Inui 1986), the next step should be to move toward highly targeted intervention studies designed to improve patient care and to reduce unmet needs for postdischarge care in the home.

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NOTES

1. The last phase is rarely accomplished due to the difficulty hospital staff have in monitoring a patient's care after discharge. It is often turned over to community agencies.
2. In one-fifth of patients, the social worker was involved as a case manager; in the remainder, the social worker participated in the overall discharge plan but had no primary responsibility for specific discharge plans.
3. The "other" category of insurance coverage predominantly includes those with only private insurance (10.9 percent); the remainder are Medicaid only (1.9 percent) and no insurance (1.2 percent). Given this distribution, this category was expected to be most like the category of patients having Medicare plus private insurance.

4. Unknown interdisciplinary status was entered in the models to control for unknown cases; the real comparison for these analyses is between high and low interdisciplinary.

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