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DECISION MAKING IN LONG-TERM HEALTH CARE PLANNING

by

Frances M. Weaver

A Dissertation Submitted to the Faculty of the Graduate School  
of Loyola University of Chicago in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Philosophy

May

1987

@ 1987, Frances M. Weaver

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## VITA

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## INTRODUCTION

It is projected that the United States population will increase by 40% between years 1977 and 2035. The elderly population alone, is expected to double in size (Garner & Mercer, 1982). Coinciding with this increase, there is the rising demand for health care services. Individuals over age 65 consumed over 29.4% of all personal health care expenditures in 1978 at an estimated cost of \$49.9 billion (Select Committee on Aging, 1982). This cost is expected to increase as the proportion of elderly consumers increases. As a result, long-term health care alternatives have flourished in the past few years. In addition to traditional nursing home care, numerous hospital and community-based services have developed. Community nursing services, homemaker services, adult day care, residential care, and hospice are some of the more familiar programs available.

Although a great deal of reseach has been devoted to medical decision making, little work has specifically examined decision making in long-term health care planning. Accordingly, the focus of the present research is to study decision making in discharge planning for patients who might require follow-up care. Therefore, it is necessary to first review the area of decision making, especially as it pertains to medicine and health care.

## REVIEW OF THE LITERATURE

### Decision Making

Research on decision making in the area of medicine has typically relied on three basic paradigms: problem solving, judgment and decision making (Elstein & Bordage, 1979). Problem solving is descriptive, concentrating primarily on the information processing aspect of clinical reasoning (Elstein et al., 1978; Newell & Simon, 1972). The goal is to describe the process associated with a particular decision task and to explain the process in terms of basic psychological principles. The judgment approach is descriptive and prescriptive. Descriptively, this approach attempts to represent or "capture" judgmental policy using statistical models (e.g., Goldberg, 1970; Hammond et al., 1975; Hoffman, 1960). The prescriptive aspect of this approach is that clinical judgment can be improved upon using the formulas originally derived from subjective judgments -- a method referred to as "bootstrapping" (Goldberg, 1970, Hoffman et al., 1968). The third approach, decision making has as its goal the optimal combination imperfect information. Decision theory examines the situation of risky choice under some uncertainty (Edwards, 1961; Gorry, 1981; Slovic, Fischhoff

& Lichtenstein, 1977; Tversky & Kahneman, 1974). This paradigm is normative and prescriptive; it offers a set of guidelines for the decision maker who wants to be rational (Elstein & Bordage, 1979).

Information processing. There are two basic research tasks within an information processing approach to decision making: to identify the sources of information actually used by the individual; and to identify the rules or processes which are used to combine information into a decision (Payne, 1973). The intention of this approach is to portray the individual as a decision maker; that is, how the individual makes a decision, rather than how the person should make a decision. The information processing approach is based on the premise that the individual decision maker is an information system that has limited processing capacity. Therefore, the decision maker must simplify the situation by being selective. The nature of the task is more instrumental in determining possible decision strategies than are individuals' own internal characteristics (Hogarth, 1974; Newell & Simon, 1972).

The typical methodology of information processing involves recording and analyzing the strategies and thoughts of clinicians as they attempt to solve problems—an approach involving process tracing techniques (Elstein et al., 1978; Johnson et al., 1982; Newell & Simon, 1972).

One process tracing technique that is increasingly relied upon is verbal protocol analysis. Verbal protocols are collected by simply asking subjects to give continuous verbal reports, to "think aloud", during their performance of a decision task (Newell & Simon, 1972; Payne, Braunstein & Carroll, 1978). For analysis, the protocol is broken down into short phrases and these phrases are further encoded into formal categories. This data may then be used in a number of ways: a) as a means of confirming and extending the interpretation of data collected from other methods; b) as a method of exploratory research; c) as a way to test hypotheses; or d) as a basis for building and testing computer models of decision behavior (Payne et al., 1978).

To study the reasoning strategies of clinical neurologists, for example, Kleinmuntz (1968) used process tracing techniques in a game of Twenty Questions. The game began with the interrogator presenting a few symptoms or biographical features of a case. Respondents asked questions based on the information presented to them. This continued until a decision was reached. The sequences were found to consist of binary tree structures. The length of the decision sequence varied as a function of the expertise and experience of the subject. The more experienced neurologists asked fewer questions and focused on questions

most likely to yield maximum information.

One of the most ambitious attempts to empirically study medical reasoning using the information processing approach was conducted by Arthur Elstein and his colleagues (1978). Elstein et al. used a series of techniques ranging from "high fidelity" programmed patient simulations involving trained actors, to lower fidelity situations in which physicians responded to paper and pencil simulations, to fixed-ordered problems in which certain problem-structure variables were systematically varied. The high fidelity situation was set up to resemble as closely as possible a patient's visit to a doctor. The cases presented were based on actual clinical records. Trained actors simulated patients based on these records, providing medical history, etc. Physical and lab reports used were the actual patients'. Each physician could decide how much data to collect and could exercise various options including referring the patient elsewhere. Throughout the workup, physicians were asked to think aloud whenever possible to provide an ongoing account of their reasoning.

The results indicated that physicians utilized a "hypothetico-deductive" method for solving diagnostic problems. Physicians generated hypotheses early in a workup, based on their background knowledge of medicine.



As data were collected, hypotheses were generated, periodically evaluated and when necessary, the hypotheses were reformulated or new ones were generated.

Comparable results were found using a more controlled experiment involving patient-management problems (PMPs). Physicians were given a short verbal description of the patient's problem, and then they decided how to proceed on the workup of each patient. Decisions were recorded in an answer booklet that directed the physician to the section designated by his choice. More information was given, more choices were made and this continued until a diagnostic decision was made. This approach allowed researchers to monitor information acquisition.

Finally, Elstein et al. (1978) introduced even more control when they presented subjects with fixed-order problems in which certain variables were manipulated. For each problem, data were presented on six cards with two cues per card. After receiving each set of cues, the physician was asked to verbalize about the diagnostic hypotheses being considered and the cues associated with them. The cases varied on two dimensions: diagnostic specificity and cue consistency. The phenomenon of early generation of hypotheses replicated the findings of the more realistic studies. These results suggest that fixed-order problems can be used to study certain aspects

of clinical reasoning (Elstein et al., 1978).

A more recent examination of clinical judgment using process tracing was conducted by Johnson et al. (1982). Researchers used the "think aloud" procedure in conjunction with a judgment task to investigate how clinicians used cues related to a specific congenital cardiac anomaly. Using an original profile of patient data for a cardiac defect known as Total Anomalous Pulmonary Venous Connection (TAPVC), an expert pediatric cardiologist identified four cues important for diagnosing the case. Sixteen versions of the original case were created by completely crossing the four cues. Information about patient history, physical examination, x-rays and ECG were unmodified for each version. Due to the strong similarities across versions, seven additional and unique cases were constructed to represent one of seven other cardiac diseases. Subjects represented three levels of expertise in pediatric cardiology. Experts were board-certified staff members in pediatric cardiology; trainees consisted of individuals with several years of training in the speciality of pediatric cardiology; and students were fourth-year medical students. Each subject was asked to read the patient data for each of eight cardiac diseases (i.e., TAPVC plus the seven other diseases for which cases were constructed). As they processed the data for each case and evaluated the

disease alternatives, subjects were also asked to "think aloud."

Experts more often evaluated TAPVC as the most likely diagnosis than either trainees or students. Novices and experts also differed in their use of critical cues and cue combinations. Furthermore, experts generally agreed on their interpretation of data cues as either expected or unexpected findings with respect to particular diseases. This was less often the case with trainees and students. Finally, experts and novices relied on qualitatively distinct "lines of reasoning" in reaching clinical judgments. A line of reasoning represents a diagnostic strategy for recognizing and interpreting clinical findings (Kassirer & Gorry, 1978). Novices' judgments were characterized by a confirmatory line of reasoning in which only expected (i.e., consistent) findings were considered. Inconsistent findings were neither recognized nor taken into account. Experts considered the implications of both expected and unexpected (i.e., inconsistent) findings using a discriminate line of reasoning. This strategy is more efficient because potential diagnoses are not ruled out prematurely.

The information processing approach to studying medical reasoning has its strengths and weaknesses. The major strength is a heavy reliance on direct observation

and analysis of performance even in simulated situations (Elstein & Bordage, 1979). Process tracing also provides a way of identifying the potential processes and knowledge underlying an individual's judgment (Svenson, 1979). The major weakness of this approach is that the method is very time consuming and labor-intensive. As a result, most research is limited to examining performance on a small number of problems (Elstein & Bordage, 1979). Second, whereas these analyses yield satisfactory descriptions of actual decision behavior, they do little to improve the outputs of decisions. Judgment and decision theories have been more concerned with identifying and developing ways of improving decision behavior.

Judgment theory. Within the judgment domain, three central questions are asked: "How do clinicians use and weigh the information given to them to make a judgment about some criterion event, such as a diagnosis or treatment? How consistent are the judgments across judges and across similar situations? Finally, how accurate are the judgments in comparison to a criterion?" (Elstein & Bordage, 1979, p. 344). The judgment paradigm captures actual judgment policy using statistical models and, in turn, uses these models in an attempt to improve the clinical judgment of the same individuals upon which the models were based.

Two paradigms are typically used within the judgment approach: the correlational paradigm and the analysis of variance (ANOVA) paradigm (Slovic & Lichtenstein, 1971). The correlational approach has as its foundation Brunswik's lens model (Brunswik, 1955, 1956). Viewing the judge and the criterion event as dichotomous, the lens model used the analogy of a convex lens to illustrate the relation between a judge's perception or criterion as mediated by a set of cues (Hammond, 1955; Hammond et al., 1964). A formula can be generated using this model to yield a multiple correlation coefficient that indicates how well a person's judgments can be predicted by a linear combination of cue values (Slovic & Lichtenstein, 1971).

The ANOVA approach is very similar to the correlational paradigm but is also sensitive to detecting curvilinear and configural (i.e., interactive) use of information in decision strategies. The configural use of information indicates that a judge's interpretations of a cue varies according to the nature of other available information (Slovic & Lichtenstein, 1971). The ANOVA strategy is able to detect any main effects for specific cues as well as any interaction effects due to patterns of cues.

Judgment strategies have been used, for instance, to examine how medical personnel use information in decision

making. Clinical endocrinologists were presented with five pieces of clinical information and asked to choose one of three treatments for an overactive thyroid (Moore et al., 1974). Their strategies were captured in a multiple regression equation. The regression weights reflected each clinician's relative use of the information provided. Clinicians did not use all the information available to them, but rather tended to focus on the medical history and to ignore the laboratory data.

Similarly, Hoffman et al. (1968) assessed the adequacy of an ANOVA model for describing how radiologists judged the malignancy of gastric ulcers using roentgenological symptoms. Radiologists were presented with 96 profiles of hypothetical ulcer patients and asked to rate each case on a 7-point scale (1= definitely benign to 7=definitely malignant). Results indicated a low degree of interjudge agreement. Individual ANOVAs were performed on each judge's responses. Disagreements across judges were attributable to underlying differences in cue utilization. Most of the variation in judgments resulted from the nonconfigural use of individual findings.

A more recent study that incorporates aspects of judgment theory was conducted by Deber et al. (1985). They examined the impact of selected patient characteristics on clinicians' treatment recommendations

for end-stage renal disease. Selected characteristics were manipulated in case vignettes. Certain factors were key determinants for both preferred treatment modalities and the number of alternatives considered acceptable for each case. This methodology was designed to distinguish between areas of medical consensus and situations where patient characteristics could not explain treatment selection.

It has been consistently found in medicine (e.g., Einhorn, 1972; Gillis & Moran, 1981) as well as in other disciplines such as education (e.g., Dawes, 1971) and clinical psychology (e.g., Goldberg, 1968, 1970; Sawyer, 1966) that decision makers have difficulty combining information in a way that allows for optimal decision making. Comparison of clinical versus actuarial predictions has typically supported the superiority of actuarial predictions (Einhorn, 1972; Goldberg, 1968; Meehl, 1959). Actuarial models optimize the relationship between the predictor and the criterion (Dawes, 1979). However, the linear model cannot replace the expert decision maker in deciding what variables are important. Clinicians know what to look for in reaching a decision, but fail when it comes to integrating that information to reach a decision (Gillis & Moran, 1981; Hoffman et al., 1968; Slovic, 1972).

The distinction between knowing what information is

important and being able to integrate this information is illustrated quite well in a study of medical judgment. In this study, pathologists were asked to view biopsy slides taken from patients having Hodgkin's disease and to classify the disease in terms of severity (Einhorn, 1972). Overall ratings did not predict survival time of the 193 patients, all of whom died. Correlations of severity ratings with survival time were all virtually zero. However, the variables that the doctors identified in their decision strategies did predict survival time when they were used in a multiple regression model.

Linear regression models work because they can optimally integrate information that decision makers have identified to be good predictor variables (Dawes, 1979). Individual decision makers, in contrast, have little success when they attempt to combine the information to render a decision. For this reason, Einhorn (1972) has suggested that the expert should be used to gather pertinent information which should then be subjected to a mechanical combination process.

The same regression models used to describe decision makers' judgments can also be used to improve predictions beyond those made by the judges from which the models were initially generated (Dawes, 1971; Goldberg, 1970). This phenomenon is known as "bootstrapping". Bootstrapping



models are able to improve upon judges because they eliminate judgmental unreliability (Camerer, 1981; Dawes, 1979). However, bootstrapping is superior to other prediction methods only if decision makers are able to correctly specify differential cue weights that reflect real differences in cue-criterion relationships. Judges do about as well as bootstrapping models if they use an equal-weighting strategy (Camerer, 1981).

Despite the difficulties diagnosticians have in optimally using cues in their judgments, they are able to recognize important information and are recognized as experts in their field. Hoffman et al. (1968) has argued that a judgment paradigm such as ANOVA may not only provide diagnosticians with insight into their inferential processes, but may also provide diagnostic trainees with a valuable training device for assessing their own skills. Thus, the judgment paradigm is both descriptive and prescriptive: it identifies how clinicians use information to make judgments and subsequently uses this information to improve upon existing judgments. Decision theory also provides a paradigm that is prescriptive.

Decision theory. Of the three research paradigms used to examine medical reasoning, decision theory has received the most attention. The goal of this approach is to find models that prescribe rational choice under conditions of

uncertainty--that is, to identify how choices should be made (Elstein & Bordage, 1979). Decision theory models such as expected utility are concerned with optimizing choice. These models consist of a set of rules for combining probabilities (beliefs) and utilities (preferences) in order to select an option (Pitz & Sachs, 1984). Decision theory is concerned not only with diagnostic accuracy, but also with the benefits and costs of decisions.

Because conclusive evidence regarding diagnosis or the appropriateness of a particular treatment does not always exist, there is a heavy reliance on probabilistic statements in medical diagnosis (Beach, 1975). When a physician chooses among options, this decision is based on: (1) the probabilities of the various outcomes; and (2) the subjective values placed on these outcomes (Schwartz et al., 1973). For example, in treating hypertension, there may be a high probability that drug treatment will control blood pressure. However, it is also known that treatment will be necessary for years, which carries risks such as the development of serious drug reactions, or that the patient may abandon the tedious and expensive treatment and hypertension may recur (Schwartz et al., 1973).

One approach that attempts to portray how people ought to behave in the face of uncertainty is decision

analysis. The following general procedure is prescribed for making a decision: (1) list the options that are available for gathering information and for action; (2) arrange these options and consequences, including subsequent options, in chronological order and assign to each consequence a value; (3) assess in qualitative terms the chance that each consequence will occur (Gorry, 1981, p. 485). The problem can then be represented in a decision tree. Due to the uncertainty involved, the quality of a decision cannot be judged by its outcome. However, the quality of the process by which the choice was made can be judged. If the choice made had the highest expected value of all the available choices, then given the probabilities and values involved, it was the best choice, regardless of the eventual outcome (Gorry, 1981).

Schwartz et al. (1973), for example, developed a decision tree to study the alternative courses of action available to the clinician in dealing with severely hypertensive patients with possible functional renal artery stenosis. Observations of students and physicians dealing with these cases suggested that only a few approached the problem as outlined in the decision tree. In many instances, subjects' responses represented the consensus as to how to approach most patients with a given problem, based on repeated analysis of the general situation by

experts. This strategy is fine to the extent that the patient is typical. However, if a patient's problem deviates from the norm, such a consensus strategy is nonoptimal. Such nonroutine situations can be dealt with using decision analysis (Schwartz et al., 1973).

Determining the probabilities and values involved in considering various alternatives in decision analysis is best approached via Bayesian statistics. With this technique, subjective probabilities are obtained which are revised in the light of relevant new information and then combined with value assessments to select the preferred action (Elstein & Bordage, 1979; Slovic & Lichtenstein, 1971). Revision of probabilities is accomplished using Bayes' theorem. Bayes theorem is a normative model of decision making in that it specifies certain internally consistent relationships among probabilistic opinions and serves to prescribe how people should think (Slovic & Lichtenstein, 1971).

The use of clinicians' subjective likelihoods versus actuarial likelihoods in Bayes' theorem were compared in an attempt to diagnose thyroid disease (Gustafson et al., 1971). Comparable predictions were made using either model. The subjective likelihood method, however, was less expensive in terms of time and money. Specifically, it was less expensive to pay a few experts for their opinions than

to abstract information from medical records. To date, however, there is not enough research to determine conclusively whether actuarial or subjective probabilities are better predictors (Beach, 1975).

More recently, attention has focused on the limitations of a strict decision theory model such as expected utility theory. The basis of the expected utility model is that individuals select an option so as to maximize utility or value. However, this approach fails to consider the fact that there are systematic, predictable differences between normative models, such as expected utility and actual behavior. Prospect theory (Kahneman & Tversky, 1979; Thaler, 1980) is an attempt to incorporate description into normative theory. The model replaces objective probabilities with subjective decision weights and replaces the utility function with a value function that is defined over changes in wealth rather than final asset position (Thaler, 1980).

A recent doctoral dissertation (Toland, 1984) examined whether prospect theory or expected utility theory could explain physician decision making processes in forming treatment decisions. Physicians read case studies of cancer patients and then made treatment selections. Treatment selections were worded as probabilities (e.g., choice of a modified radical mastectomy which has a 5 year

survival rate of 81%). Although physicians' choices were more consistent with the expected utility theory, their preferences for risk could not be explained by either prospect theory or expected utility. This study, however, was limited to only one type of case. Further work of this nature is needed before a definite statement regarding physicians' selection of treatment strategies can be made. This statement can also be expanded to include decisions regarding long-term care.

Although the application of decision theory to clinical problem solving has resulted in many advances in medicine, it has not been readily incorporated into medical decision making. Using decision trees requires an expertise that most physicians do not have (Pauker & Kassirer, 1986). Furthermore, developing a decision tree takes time, and the simplified models do not necessarily reflect real medical problems. However, with further research investment, decision analysis may become a viable part of clinical work.

#### The Fallibility of Clinical Judgment

Many studies in the medical field have assessed the reliability and validity of clinicians' judgments. Koran (1975) provides an excellent review of research on physician reliability published between 1959 and 1974. Topics of study in this area include interjudge and

intrajudge agreement among clinicians on various tasks, errors in clinical reasoning and comparison of physicians with computer (actuarial) models of decision making.

After reviewing the literature, it is apparent that intra-judge and inter-judge agreement among physicians on various tasks is lower than would be desired. For example, Graham, deDombal and Goligher (1971) examined physician agreement in assessing the physical signs and clinical progress of eight severe, acute ulcerative colitis patients. Some signs such as anemia and abdominal rigidity could not be reliably assessed by physical examination, whereas other signs could. The three surgeons did agree more than 90% of the time on whether surgical management was indicated. However, they only agreed 51% of the time on whether a patient was getting better or worse.

As another illustration, Simonson et al. (1966) studied the diagnostic accuracy of the electro-cardiogram by submitting 105 numbered, 12-lead tracings with each patient's approximate age to ten expert readers. Correct diagnoses were determined using independent methods, e.g., autopsies. There was wide variation in the diagnostic accuracy of different readers, suggesting a great deal of inter-observer disagreement. Wright and Acheson (1970) conducted a similar study to assess physician agreement in x-ray evaluation of osteoarthritis. The most important

influence on overall interobserver agreement was the proportion of normal joints in the sample. As the proportion lowered, so did the level of agreement. Normal joints are the easiest to identify.

In a more recent study, Gillis and Moran (1981) determined the range of agreement among pairs of physicians' decisions concerning appropriate medication for 40 hypothetical cases. Judges demonstrated very low, yet statistically significant, levels of agreement. Agreement was slightly above chance. The major reason for disagreement appeared to be differences in prescriptive policies; different physicians used different stimuli in making their decisions. Furthermore, physicians were inconsistent in their own individual policies.

It is quite evident that the reliability of physician judgment is low. However, Koran (1975) has noted that most of the available studies are limited to small, unrepresentative samples of physicians. Moreover, many of the studies fail to correct for chance agreements, and many of the tasks studied are performed differently from the way they are performed in clinical practice.

Given this unreliability in physician judgment, researchers have devoted time to identifying where and why errors in judgments occur. One reason for unreliability discussed previously is the difficulty clinicians have in



combining information optimally. A second reason is that most medical decisions are made with some uncertainty. As a result, when assessing the probabilities and values of various options, physicians may rely on heuristics to simplify things. But heuristics, although useful, can sometimes lead to severe and systematic errors.

One frequently used heuristic is the availability heuristic. The availability heuristic operates on the principle that the frequency or probability of an event can be assessed by the ease with which instances can be brought to mind (Kahneman, Slovic & Tversky, 1982). Examples of large classes of events are usually retrieved faster than examples of less frequent events. However, retrieval of examples may be influenced by familiarity, salience, or recency of occurrences which may or may not be related to the actual frequency of occurrence (Tversky & Kahneman, 1973).

In a study designed to test these ideas, internists were presented with eight simulated cases and asked to generate four to six tentative diagnoses for each and to list them in the order in which they were recalled (Schiffman et al., 1978). Furthermore, they were asked to estimate the probabilities of their tentative diagnoses. Schiffman et al. found strong evidence supporting the availability heuristic. The availability (rank order) of

diagnostic hypotheses and subjective judgments of their probability were highly correlated for almost all the cases. The authors interpreted this finding as suggesting that availability may distort physicians' diagnostic judgments. Inaccurate initial diagnoses may distort probability judgments, leading to management decisions that are inappropriate. Christensen-Szalanski et al. (1983) also reported evidence of an availability bias in risk judgments of several diseases.

In reviewing the relevant literature, we have found that physicians are selective in their utilization of data and have difficulty in combining data in an optimal way. They are inconsistent in their judgment strategies, have difficulty using and understanding probabilistic information, and their judgments of subjective probabilities are often biased or erroneous. Nonetheless, physicians are experts when it comes to diagnosis and treatment. Although fallible, physicians are better at their jobs than anyone else would be. With the increasing use of community home care services, however, it is important to examine how physicians and other relevant people make long term care decisions, so as to identify potential points for improvement.

#### Policy Issues Relevant to Long-Term Care Planning

One area in which clinical decision making is

becoming increasingly important is in the planning of long-term care. The increasing numbers of elderly and severely disabled individuals (e.g., chronic illness, cancer, stroke) combined with the expanding number of available options has made planning for long-term health care a complex task. The number of alternatives for long-term care is practically unwieldy. The alternatives range from institutional facilities, such as hospitals, nursing homes, extended care units and rehabilitation centers; to community-oriented facilities, such as group and foster homes, domiciliary care, and retirement villages; to home based services, such as visiting nurse, home health aides, hospital based home care and hospice and emergency buzzer check-in systems (Gurland, Bennett & Wilder, 1981). Most of these options have developed as alternatives to nursing home placement.

The recent flurry of interest by the federal government in home health care as an alternative to nursing home/institutional care is largely a result of dollars and demographics (Raber, 1983). Lawmakers and lobbyists, concerned with rising federal expenditures for health care and with the increasing number of elderly requiring these services, have sought ways to reduce these costs. Alternatives to institutional care have been seen as reactions to the cost, as well as care problems associated

with institutions (Gurland et al., 1981).

Cost. A number of recent studies have examined the cost-effectiveness of various alternatives to institutionalized health care. This has been facilitated in part by the government's increased funding of home and community-based care. For example, Congress amended the Social Security Act in section 2176 of the Omnibus Reconciliation Act of 1981 to permit states more freedom to experiment with home-based and community-based long-term care (Weissert, 1984).

In a recent study of health care alternatives, Skellie et al. (1982) randomly assigned clients judged appropriate for community-based health care services to one of three services or to a customary care control condition. The experimental group services included: home health services including nursing, therapy and homemaker/chore services; an adult day care center; and supervised living arrangements for clients unable to live independently in their own homes. Cost-effectiveness was assessed using monthly Medicare and Medicaid expenditures, nursing home days and days of survival over 360 days of client enrollment. Average longevity was greater for the clients in the experimental group and subsequently, the average Medicaid and Medicare costs were higher than in the control group (the control group was eligible for any other

long-term services available). Costs for experimental subjects at higher risk of entering a nursing home were somewhat lower than for those at high risk in the control group.

In a similar experiment, Gerson and Hughes (1976) compared the costs of home care and hospital treatment for patients in a variety of short-term diagnostic categories. Patients were randomly assigned either to receive home care services by leaving the hospital early or to remain in the hospital the traditional length of time. Regardless of whether treatment was given in the home or at the hospital, the costs associated with providing care were equivalent. There was basically no difference in cost between home care and hospital treatment. However, it should be kept in mind that the subjects had short-term problems and were at little risk of being rehospitalized. Patients with long-term or chronic problems, in contrast, might be better served at home if rehospitalizations can be reduced.

One of the most recent studies of cost-effectiveness, was a randomized study of hospice care funded by the Rand Corporation (Kane et al., 1983). Veterans Administration hospital patients with a diagnosis of terminal cancer were randomly assigned to receive hospice or conventional care. Hospice care included both home care and a special inpatient unit. There were no significant differences

between the two groups with the exception of satisfaction with care. Patients in the hospice program were more satisfied with the care they received than were patients in the control group. Hospice did not result in reduced use of hospital days or of therapeutic procedures; hospice care was at least as expensive as traditional care.

Most studies in the area of cost-effectiveness have not found reduced costs as a result of alternative health care services. On the contrary, these services may in fact be more costly. Hughes et al.'s (1984) evaluation of a long-term, comprehensive home care program, for example, found that despite savings in nursing home days of care, the average per-capita costs for experimental clients (i.e., those receiving home care) were almost 20% higher than for controls. However, the increased cost was accompanied by an increase in quality of life. Researchers (e.g., Hughes et al., 1984; Skellie et al., 1982; Weissert, Wan & Livertos, 1979) argue that cost savings for home care services will not be evidenced unless more effort is made to target those patients who would most benefit from these services.

Assessing health care needs. The great emphasis placed on assessing the costs of long-term care has resulted in much less attention focused on the identification of clients most likely to benefit from the

variety of options available. Tremendous effort has been made to provide alternatives to institutional care. However, with such diversity, it is difficult to assess the extent to which these alternatives prevent or postpone institutionalization (Garner & Mercer, 1982). Concerning this point, Gurland et al., (1981) have outlined a number of shortcomings of the alternatives that presently exist:

...(1) a potentially high demand for these services that might swamp the existing and planned services without much impact on the number in an institution; (2) difficulty of gaining entry to alternatives of care, given their patchy and often evanescent geographic representation, the maze of rules of eligibility and the inadequacy of information and referral pathways; (3) a lack of well trained staff, hence problems of supervising, monitoring, and regulating against the possibility of fraud, abuse and poor quality care, especially when care is given in such a wide range of sites; (4) high costs of transport for clients to central sites; and high travel time for service providers to peripheral sites; and (5) inefficiencies that are inherent in a system in which clients with multiple problems use multiple services that cut across traditional disciplinary boundaries, where the services are neither coordinated nor integrated (p. 55).

Research in this area has been plagued by inadequate conceptualization of the issues and by comparisons that are inappropriate. Moreover, there are no clearly established criteria for assessing outcomes of home care versus institutionalization (Garner & Mercer, 1982).

Despite these problems, several studies have attempted to identify the characteristics of individuals utilizing long-term health care services. Branch and Jette

(1982), for example, conducted a prospective study of a random sample of non-institutionalized elderly living in Massachusetts in order to predict who was most likely to require institutional care in subsequent years. Five variables were significantly related to institutionalization: (1) increasing age; (2) use of ambulatory aids such as a wheelchair or walker; (3) mental disorientation; (4) living alone; and (5) assistance in performing instrumental activities of daily living such as shopping or housekeeping. These results resemble those of earlier studies. As another example, Townsend (1965) contrasted institutionalized with non-institutionalized elderly in England and Wales and found that institutionalized residents were generally older, and more likely to be widowed or unmarried, married without children, isolated and lacking in social services. Institutionalized elderly were more likely to be women, with a greater number of medical conditions, with greater functional disabilities, with no help from relatives and were typically better off financially (Greenberg & Ginn, 1979). Elderly who received home care services were more likely to live with another individual in the same household (Neilson et al., 1972; Palmore, 1976). From these studies, it appears that the major predictor of whether an individual requires institutionalization is



whether or not the individual lives alone.

Extending this work, Wan, Weissert and Livieratos (1980) conducted a study to examine the impact of health care factors and patient characteristics on the extent to which an elderly individual can maintain independent physical, psychological and social functioning without being institutionalized. Patients were randomly assigned to receive experimental services as alternatives to long-term institutional care in one of three samples: day care services, homemaker services, or a combination of day care and homemaker services. Comparing experimental and control groups in each of three samples, Wan et al. (1980) found significantly better physical functioning for the day care sample; contentment level for the homemaker sample; and physical functioning, mental functioning, contentment and activity level for the combined services group compared to the control group. Increased use of experimental services was associated with improved outcomes of care. Outcomes of care were also affected by patients' diagnostic conditions, mental functioning prior to the study and utilization of other health care services.

The authors suggested that geriatric care, i.e., homemaker or day care services, be provided at varying levels of intensity for different kinds of patients, if

maximum benefits in outcome are to be obtained efficiently. Day care and homemaker services did not function as viable alternatives to institutionalization since they were expensive services for providing limited positive outcomes. Careful screening must be employed to identify patients who are truly at risk of institutionalization. Otherwise, the costs of day care and homemaker services must be added to the costs of existing services (Weissert et al., 1979).

To learn more about the home care needs of older Americans, Alan Sager at Brandeis University conducted a series of studies (Sager, 1980a, 1980b, 1983). Sager measured the consistency of professionals', clients' and families' hypothetical estimates of specific needs of individual home care clients and compared these with actual services used. One hundred and sixteen clients from eight home care agencies in eastern Massachusetts were randomly selected to be included in the study sample. Each client was comprehensively assessed to: (1) describe the client's well-being in each of nine "domains", e.g., medical well-being, personal cleanliness, mobility; (2) obtain information that study consultants could use to design hypothetical home care plans for the client; and (3) to record the help the client was currently receiving. Clients were similarly assessed again three months later.

Soon after the second assessment, clients and/or a

close relative were interviewed concerning their opinion about needed services. Consultants (i.e., physicians, hospital discharge planners and floor nurses) were asked to review the patient assessments and decide what services were needed to sustain each client at home in a "safe, adequate and dignified" manner (Sager, 1980b, p. 4). A second group of professionals, those involved in direct care of patients in the hospital (i.e., each patient's own physician, discharge planner and nurse) were also asked to identify needed services for the study sample.

Patients, families and professionals were in good agreement as to the total episodes of home care needed by the average patient. Families rated their own ability to provide help the highest, whereas professionals placed the strongest reliance on paid services. Although all groups were generally in close agreement about the total episodes of needed help in the areas of personal care, housekeeping, nursing and medical/therapeutic services, families' stated willingness to help with personal care and with nursing was greater than professionals anticipated.

To determine which group was best able to design home care plans that were effective, the consistency and reliability of judges was assessed (Sager, 1980a). Arguing that functional ability in activities of daily living (ADL) is probably the best single predictor of need for home care

services (see also Fortinsky et al., 1981), Sager found a clear negative relationship between ADL functioning (using the Barthels Self-Care scale) and the number of episodes of home care recommended by each of the three groups. Professional agreement about home care service needs was best at the most aggregate levels and decreased as more specific services were examined. There was increasingly pronounced inconsistency in professional judgment at the level of individual care planner across the patient sample. Furthermore, factor analysis indicated no consistent pattern of agreement within a profession. Physicians, discharge planners and home health planners clustered together in their judgments across roles and training.

For a subsample of patients, professionals assessed home health needs at two points in time, to determine test-retest reliability in judgment. On average, most professionals were consistent with themselves over time. Professionals also agreed with each other about which patients needed more or less care, but disagreed on how many hours of care were sufficient to sustain individual patients at home.

In summary, it appears that patients, families and professionals recommended care in moderately reasonable and equitable ways. Considering the general obstacles to consistency and the special attributes of long-term care

planning, professional consistency was acceptable. Home care planning might be best served by drawing upon a balanced influence from patients, families and various professionals (Sager, 1980a). Involvement of patients and families in the decision making process has been subsequently recommended by other researchers (e.g., Coulton, Dunkle, Goode & MacKintosh, 1982).

#### Decision Making in Discharge Planning

The above mentioned research by Sager raises a number of issues regarding decision making in long-term care. One issue is the number and variety of individuals involved in the planning phase. The roles of these professionals often overlap, e.g., social workers and nurses are often involved in both discharge and home care planning. Sager's work centered on the planning of services after a decision to refer for home care had been made.

Prohaska and McAuley (1983; McAuley & Prohaska, 1981), in contrast, have examined discharge recommendations before any follow-up care decision has been reached. In this research, placement recommendations for institutionally vulnerable elderly were examined. Factors such as family care and ADL functioning were found to be important predictors of placement recommendations. Family care was also found to be an important mitigating factor for other patient deficits. However, this study was

limited to patients that were considered to be institutionally vulnerable. To date, there is unfortunately little, if any, work that examines how long-term care decisions are made across discharge options for patients spanning the continuum of health care follow-up needs.

A second issue related to discharge planning is determining what information affects the choice of discharge plan. This is especially important now that the number of discharge alternatives has increased so rapidly. In addition, the knowledge of the various options may vary from person to person.

The present research proposes to take one step back from Sager's work by examining the issues involved in making a choice among the various long-term care alternatives available. Deciding among the alternative care options raises a number of questions: What variables influence decision-making in long-term care planning? Do various professionals in both the same and different fields agree on their choices? How knowledgeable are clinicians regarding the various long term care options available?

The major question to be addressed is how post-hospital health care plans are made. Whereas much attention has focused on examining the cost-effectiveness of various health care programs, much less emphasis has

been placed on how discharge plans are made. From personal observation, discharge plans are often made just prior to the patient's release from the hospital. This seems to be a somewhat haphazard decision making process, and it is not always clear what characteristics are used in making such decisions. Furthermore, with the increased involvement of multidisciplinary health care teams in the decision making process, it is unclear who is involved and who is most knowledgeable making informed decisions about post discharge health care plans.

The questions raised in the preceding review are those that are typically addressed in the judgment theory approach to decision making. The major emphasis of judgment theory is to determine what information is used and how it is used to reach a decision. Consequently, this study will attempt to answer the following questions:

1. What characteristics do medical decision makers use when making plans for post hospital long-term health care services?
2. Are these characteristics the same within and across disciplines?
3. Are professionals consistent both within and across disciplines in their decision strategies?
4. Are these results generalizable from one institution to another?
5. Can these decision strategies be captured in a model? And if so, will it improve upon clinicians' judgments?

Based on the existing literature on medical decision making and the use of judgment theory, one would predict that inter-judge agreement regarding long-term care planning should be low both within and across disciplines. Research has shown that whereas medical personnel are very competent at identifying critical characteristics for making a decision, they have difficulty combining this information into actual decisions. Therefore, attending physicians, residents, nurses and social workers are expected to be inconsistent in their cue utilization and resulting decision strategies.

Furthermore, I would hypothesize that professionals will often select those options with which they are more familiar than those with which they are less familiar. Therefore, familiarity with various long-term care options will be assessed. I would predict that social workers, due to the nature of their training and job, should be most familiar with and more willing to utilize a variety of long-term care options than other professionals. Physicians should be least familiar with long-term care options, since their primary focus is on acute hospital care.

However, there should be some differences between attending physicians and residents. Attending physicians are in an institutional environment by choice. There is a



motivational factor; it is a career choice. Furthermore, attending physicians have had much more experience with discharge planning by virtue of the fact that they have been physicians for a longer time than have residents. Residents are in hospitals for training and are subsequently less familiar with long-term care decision making. Therefore, attending physicians should be more familiar with health care alternatives.

Nurses should fall somewhere between social workers and physicians in their familiarity and willingness to utilize health care alternatives. Nurses work with patients on a daily basis and are in regular contact with the patients' families. Consequently, they are in a good position to assess the patient's long-term care needs. In sum, familiarity with and use of different alternatives should increase from residents to attending physicians to nurses and finally to social workers.

Decision strategies should also differ by profession as a function of expertise, despite inconsistencies in decision making. Social workers, whose jobs typically include the task of discharge planning, should have decision strategies that differ from the other professionals surveyed. The utilization and combination of information in case scenarios will therefore differ by profession.

Subjects' decisions may also be influenced by heuristic strategies and biases such as availability and representativeness. Availability is a heuristic strategy often used in decision making. Typically, availability is a good clue for assessing frequency of an event. However, availability is often affected by familiarity with an event or by its recency of occurrence. Medical professionals' decisions regarding long-term care could very well be affected by availability. For this reason, I will assess subjects' familiarity with various long-term care options and compare this with their choices. A relationship between the two would lend evidence to the use of heuristic strategies in long-term care decision making.

Regardless of potential inconsistencies in decision making within and across disciplines, the results should be generalizable from one hospital to another. Although the patient clientele may differ across institutions, many professionals have had or do have experience working at more than one institution. Thus it is expected that decision outcomes will vary as a function of inconsistency in judgment rather than as a function of institutional affiliation. Ultimately, the results of this work should aid in the development of a decision model for long-term care planning.

I propose to examine the above-mentioned questions by

presenting physicians, residents, nurses, and social workers from two hospitals with hypothetical case studies. Subjects will be asked to read these cases and to recommend post discharge long-term care plans. The key variables used in discharge planning will be identified and incorporated in case descriptions. These variables should be similar to those found in the literature on long-term care (e.g., patient living situation, patient functional status).

The ultimate objective of the questions posed in this thesis is to develop a model that would aid medical decision makers in making discharge health care plans. Enough evidence has accrued to indicate that even expert decision makers are fallible. Nevertheless, it should be remembered that a decision model is not an attempt to usurp the decision maker's control, but rather is a means of facilitating the decision process for all involved.

## METHOD

### Design

This study was designed as a multivariate analysis of decision-making about long-term health care. The impact of four key variables on follow-up care decisions was examined. Two between-groups variables are incorporated: profession and institution. The profession variable was composed of four groups: attending physicians, residents, registered nurses and hospital social workers. Institution refers to type of hospital, of which there were two. Results from participants at a veterans administration teaching hospital were compared with those from an university teaching hospital. Four within-group variables were included in 16 case studies: degree of ADL impairment, availability of a home caregiver, amount of follow-up and degree of patient compliance. The remainder of the information was held constant across vignettes. Outcome measures included the long-term care decisions made and the ratings of appropriateness for the five alternatives provided (i.e., nursing home, community nursing services, adult day care, outpatient clinic appointments, or no follow-up care necessary). Multivariate analyses were used to test hypotheses.

## Subjects

A sample of 123 professionals representing attending physicians, residents, nurses and hospital social workers from two area hospitals completed the discharge planning questionnaire. Ninety-one participants (74%) were employed at a veterans administration hospital in the Chicago area, i.e., Hines Veterans Administration Hospital, and the remaining 26% were employed at Loyola University Medical Center, a nearby university teaching hospital. Respondents were identified using hospital personnel rosters and via personal contacts. Because all participants were involved in patient care, they were familiar with the discharge planning process for patients requiring follow-up care.

Attending physicians, medical residents, registered nurses and social workers from Hines VA Hospital, and physicians, nurses and social workers from Loyola University Medical Center were sampled and sent surveys for completion. The response rate, after a follow-up letter to all who did not respond within three weeks, is displayed in Table 1. Fifty-five percent ( $N=91$ ) of Hines employees responded, whereas only one-third of Loyola professionals ( $N=32$ ) returned surveys. Due to the small number of total Loyola respondents, only descriptive information will be presented for this subgroup. Multivariate analyses were computed for the Hines sample only. Had there been a larger response rate from the Loyola sample, a multivariate

TABLE 1

Survey Completion Results by  
Institution and Profession

A. Hines VA Hospital

<u>Profession</u>	<u>No. Surveyed</u>	<u>No. Returned</u>	<u>% Returned</u>
Physician	40	20	50%
Resident	40	11	28%
Nurse	54	40	74%
Social Worker	30	20	65%
Subtotal	164	91	55%

B. Loyola Medical Center

Physician	32	7	22%
Nurse	50	16	32%
Social Worker	14	8	57%
Subtotal	96	32	33%

C. Combined Institutions

Total	260	123	47%
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comparison would have been performed between the two institutions in an attempt to cross-validate the results.

Hines sample. Sixty-four nurses from Hines were randomly sampled from an incomplete list of nursing employees, and surveys were delivered to them in person, since the researcher was in daily contact with the nursing staff. A total of 40 nurses (63%) returned the completed survey.

The entire social work roster, with the exception of social workers on the psychiatric wards, were sent copies of the survey through interoffice mail. Sixty-five percent (N=20) of those sampled completed the questionnaire.

An attempt to reach Hines residents through interoffice mail was a complete failure. Surveys were mailed to ten residents, but none were returned. This may be due in part to the fact that residents are rotated frequently throughout the hospital and are difficult to locate. As a result, residents were approached in person and asked to complete the survey. Forty residents were asked to complete the survey, but only eleven (28%) returned the questionnaire.

Attending physicians from Hines Hospital were selected at random from employee lists. In addition, certain physicians known to the researcher were also contacted by interoffice mail and asked to complete the

questionnaire. A total of 40 physicians were sent surveys and half responded to the survey. If a potential respondent did not return a completed survey within two weeks, a reminder letter emphasizing the importance of completing the survey, was sent to the individual. This seemed to improve the respondent rate for both physicians and social workers, but had little effect on residents. Reminder letters for nurses were unnecessary because the nurse sample was highly compliant and most returned their surveys promptly, i.e., within one week after receiving the survey.

Loyola sample. An attempt was made to obtain a comparison sample from a nearby university teaching hospital, i.e., Loyola University Medical Center. Surveys were distributed to 14 social workers, 50 nurses and 32 attending physicians. However, the return rate was low for all three groups. Only thirty-two Loyola medical professionals (33%) responded. Although surveys were distributed to social workers by the Chief of Social Work Service, only eight social workers (57%) returned completed surveys. Sixteen nurses (32%) surveyed from a computerized list of 50 names completed the survey. Lastly, only seven physicians (22%) randomly selected from the departments of neurology, medicine and surgery returned completed surveys. Follow-up letters reminding them to complete the survey did



not improve the response rate. The poor response rate of the Loyola sample may be attributable in part to the fact that the researcher was not familiar to any of those surveyed, nor was she closely affiliated with their institution, minimizing any obligation potential respondents may have felt to complete the survey.

Loyola residents were not sampled for two reasons. First, most Hines residents were also on rotation at Loyola, so there would have been duplication of effort if residents were sampled from Loyola. Second, after experiencing great difficulty sampling the residents at the VA hospital where the researcher had frequent exposure to potential respondents, the chances of obtaining respondents from another institution removed from the researcher were deemed miniscule.

### Materials

An actual patient case study was selected from the files of the Hospital Based Home Care (HBHC) program at Hines Veterans Administration Hospital to serve as a prototype for developing a series of hypothetical case scenarios. The HBHC program serves patients with either severe disabilities (e.g., impairments in ADL functioning, such as stroke) or terminal illnesses (e.g., cancer) who have a significant other available to care for them at home. Medical, nursing, rehabilitation, nutrition and

social work services are provided in the home by an interdisciplinary team (Jamison, Karkins & Baker, 1983). Many of the patients served by HBHC are similar to patients served by other agencies, including outpatient clinics, visiting nurse agencies, nursing homes and adult day care. In fact, a randomized study of HBHC is currently being conducted at Hines V.A. Hospital (Cummings & Hughes, 1983). Half of the patients who would be appropriate for HBHC are randomly assigned to the control group and must seek alternative services. Patients receiving HBHC could alternatively be treated by other services. The case selected was used to create 16 hypothetical cases. These case descriptions were developed with the assistance of the physician who heads the HBHC team.

Piloting the questionnaire. A questionnaire containing 16 case scenarios was developed following the format of the prototypical HBHC case and based on the results of an initial survey given to a sample of social workers, clinical nurse administrators (i.e., head nurses) and attending physicians at Hines V.A. Hospital. Respondents were sent a questionnaire asking them to list (in order of importance) the 10 factors they considered to be most important when planning for follow-up care after discharge. The four factors mentioned most frequently

were: (1) degree of impairment in physical functioning, (2) the availability of a caregiver to look after the patient, (3) the amount of medical follow-up care required and (4) the degree of patient compliance.

These four factors were used to develop 16 case vignettes. Each factor was designed to represent one of two values, either favorable towards discharging the patient home or not conducive to sending the patient home. To vary the degree of physical impairment, the hypothetical patient was either impaired in bathing and dressing; or he was impaired in bathing, dressing, transferring and urinary continence. The patient's caregiver was either home during the day and in good health, or worked and had some minor medical problems. Half of the hypothetical patients required little follow-up care (i.e., supervision of medications and monitoring of vital signs) and the other half required a great deal of care, including dressing changes, physical therapy and care of an urinary catheter. Finally, the patient was considered to be compliant with his medical treatment in eight of the cases created and noncompliant in the other eight cases.

To make cases a little more distinct, each patient was given a common-sounding last name (e.g., Robinson, Adams, Lawrence). All patients had the same four diagnoses: heart disease, diabetes, hypertension and a

recent stroke. However, for variety, the reason for admission was rotated so that each diagnosis was the initial reason for admission in four different scenarios. Patient age (60-65), eligibility for Medicare insurance and current residence in an apartment in the Chicago area were held constant for all subjects.

After the questionnaire was assembled, a social worker, a physician, two nurses and a nurse practitioner were asked to respond to it and to comment on its content, format, etc. The average time to complete the questionnaire for this group was 27 minutes. All respondents interpreted the questionnaire correctly, indicating that the instructions were clear.

Most of these subjects' comments focused on inconsistencies across cases and on missing information. Other comments related to the specificity of the information provided. One recurrent comment was that the scenarios should be more specific regarding when the wife worked, i.e., day or night hours, and number of days per week. Furthermore, subjects wanted more details about the wife's medical condition. All respondents indicated that more information about the patient and his support system would also have been helpful.

These comments were considered carefully. In the interest of keeping the survey as concise as possible, it

was decided that additional information about the hypothetical patients would hamper the completion of the questionnaire by respondents. The caregiver availability variable was made more specific, however. The condition more conducive to home discharge consisted of a wife who did not work and was in good health. The more negative condition, on the other hand, consisted of a wife who worked full-time during the day at a easily recognized job (e.g., librarian, secretary, cook, receptionist). The wife also had some rather vague medical problems (e.g., arthritis, bad back) that somewhat limited her activities in the negative condition. To avoid the possibility that subjects would perceive a working wife as resulting in a higher income, all patients and their wives were said to have a combined income between \$10,000 and \$15,000. Also, to control for the effects of perceived family support, none of the patients in the scenarios had family living in the area. These changes were incorporated into the existing questionnaire with only minor alterations to the original survey (please refer to Appendix A for a copy of the survey instrument).

The questionnaire. The 16 hypothetical cases presented to participants included the information considered to be important for long-term care planning by medical professionals. Cases were set up in booklet form,

with one case per page. Presentation of the cases was in random order; one half of the subjects received booklets in which the cases were arranged in the original random order, and the other half received booklets in which the order of the cases was reversed. This was done in attempt to counteract any potential effect due to fatigue. Following each case, participants were asked to rate the appropriateness of each of a list of five alternatives, including nursing home, community visiting nurse, outpatient clinic, adult day care and no further care required, using a 7-point scale (1=not at all appropriate, to 7=very appropriate). Subjects were then asked to indicate the type of follow-up they considered most appropriate by writing their choice in the space provided.

The last two pages of the booklet included demographic questions and a short questionnaire asking participants to indicate their familiarity with the different types of existing long-term care alternatives using 7-point rating scales (1=not at all familiar to 7=very familiar). The long-term care alternatives presented to respondents encompassed nursing home, adult day care, residential care, respite care, hospice, community nursing care and outpatient clinics. Participants were also asked to indicate their familiarity with discharge planning in general. Demographic questions

included: institutional affiliation, professional background, education, years of experience, race, religion, marital status, age and gender.

### Procedure

Potential participants in medicine, nursing and social work were identified randomly using hospital personnel rosters and personal contacts at both hospitals. Participants were either hand-delivered the case booklets along with return envelopes or were sent surveys through interoffice mail. Subjects were asked to complete the questionnaire booklet as quickly as possible to and return it to the researcher in the envelope provided. If the booklets were not returned within three weeks of delivery, participants were recontacted in person or via telephone, reminded of the study and the urgency of their participation and provided with a new booklet when necessary. After respondents had returned a completed survey, they were sent a letter thanking them for participating. The letter also included a short debriefing paragraph (see Appendix B for a copy of this letter). Participants were encouraged to contact the researcher if they wanted further information regarding the research.

## RESULTS

Little empirical work to date has examined how medical professionals make decisions regarding long-term care as a part of discharge planning. Accordingly, the present research examines what information is used in long-term care planning and whether this information varies from one type of health-care professional to another.

### Descriptive Information

Table 2 presents demographic information separately for each institution. The number of empty cells generated by the Loyola sample in chi-square analyses made institution comparisons almost meaningless. However, comparisons among professionals within institutions did produce significant differences (see Table 2). Although physicians, residents, social workers and registered nurses did not differ in race or religious preference, they did differ on variables that are profession-specific. Hines physicians had higher yearly incomes, were predominately male (70%), were older and had more experience in the medical profession ( $\bar{X}$  = 15.70 years) than the other professionals surveyed. Similar findings held for Loyola physicians: yearly income (Mdn = >\$100,000); gender - male (86%); experience ( $\bar{X}$  = 10.43 years). The sample of Loyola social workers, however, was older than their physician



TABLE 2

## Demographic Data for Medical Profession and Institution

A. Hines VA Hospital

	<u>Profession<sup>1</sup></u>				<u>Total</u> (n=91)	$\chi^2$	<u>df</u>	<u>p</u> $\leq$
	<u>Physician</u> (n=20)	<u>Resident</u> (n=11)	<u>Nurse</u> (n=40)	<u>Social Work</u> (n=20)				
<b>Race:</b>								
White	70	91	75	75	76	17.39	12	ns
Black	0	0	10	20	9			
Other	30	9	15	5	15			
<b>Married</b>	95	27	44	65	59	18.69	3	.001
<b>Religion:</b>								
Catholic	50	36	46	60	49	6.67	12	ns
Protestant	10	27	28	25	23			
Other/none	40	37	26	15	28			
<b>Gender/male</b>	70	64	8	55	38	29.86	3	.001
<b>Median Income</b>	70,000- 79,999	20,000- 29,999	20,000- 29,999	30,000- 39,999	20,000- 39,999	81.30	24	.001
<b>Military Service</b>	30	0	13	40	21	9.54	3	.05
<b>Degree</b>	MD	MD	BS	MA/BS				
<b>Mean Age (yrs.)</b>	42.0	28.1	38.7	37.8	37.8	<u>F</u> 4.44	<u>df</u> 3,77	<u>p</u> $\leq$ .01
<b>Mean Years Experience</b>	15.0	2.5	13.2	10.8	11.9	4.97	3,83	.01

TABLE 2 (cont'd)

## Demographic Data for Medical Profession and Institution

B. Loyola Medical Center

	<u>Profession<sup>1</sup></u>				<u>X<sup>2</sup></u>	<u>df</u>	<u>p</u> ≤
	<u>Physician</u> (n=8)	<u>Nurse</u> (n=16)	<u>Social Work</u> (n=9)	<u>Total</u> (n=33)			
Race:							
White	86	94	88	90	7.07	6	ns
Black	14	0	0	3			
Other	0	6	12	6			
Married	86	62	50	63	2.19	2	ns
Religion:							
Catholic	29	69	34	50	17.73	8	.02
Protestant	29	19	12	20			
Other/none	43	12	50	30			
Gender/male	86	6	0	23	19.99	2	.001
Median Income	>100,000	20,000	20,000	20,000	27.96	24	.01
Military Service	43	0	0	10	10.95	2	.01
Degree	MD	BS	MS				
Mean Age (yrs.)	37.7	32.4	40.9	35.8	<u>F</u> 3.34	<u>df</u> 2,28	<u>p</u> ≤ .05
Mean Years Experience	10.4	8.6	5.9	8.2	1.10	2,29	ns

<sup>1</sup> Unless otherwise indicated, data represents percentages.

counterparts. In addition, one institutional difference was clearly evident: Hines employees were more likely to have served in the military than were Loyola respondents. This is not surprising considering the fact that Hines is a Veterans Administration Hospital, whereas Loyola is not.

#### Familiarity with Discharge Options

Respondents were asked to rate their familiarity with eight discharge options, as well as their degree of experience with discharge planning, using 7-point scales (1=not at all familiar to 7=very familiar). A series of two-way ANOVAs using institution and profession as between group-variables revealed no significant interactions. However, for every variable examined, the effect of profession was statistically significant; and for adult day care ( $F = 4.03$ ,  $df=1,117$ ;  $p<.047$ ) and respite care ( $F = 6.64$ ,  $df=1,115$ ;  $p<.011$ ) institutional affiliation also had a significant effect. An examination of institution means for these discharge options indicates that in both instances, the Hines sample was more familiar with the discharge options than was the Loyola sample (adult day care  $\bar{X}$ 's = 3.52 and 2.91, respectively; respite care  $\bar{X}$ 's = 3.06 and 2.38, respectively).

Familiarity with discharge options by profession was examined separately for each institution. Table 3 presents mean familiarity ratings by profession for the Hines

TABLE 3

1

Familiarity with Decision Options (Hines Sample)

<u>Options</u>	<u>Professional Group</u>				<u>F</u>	<u>df</u>	<u>p&lt;</u>
	<u>MD</u>	<u>RES</u>	<u>RN</u>	<u>SW</u>			
Nursing Home	6.0	5.4	6.2	6.8	3.21	3,87	.05
Adult Day Care	3.4	3.4	2.8	5.0	7.30	3,87	.0001
Community Nursing Care	5.4	5.0	5.8	6.6	4.15	3,87	.01
Lifeline	2.8	1.4	2.8	5.9	19.08	3,87	.0001
Hospice	4.6	4.4	4.6	5.5	1.32	3,87	ns
Outpatient Clinic	6.8	6.1	5.8	5.7	3.53	3,86	.05
Residential Care	4.0	3.2	3.2	5.6	6.75	3,87	.001
Respite Care	2.6	1.3	2.5	5.5	18.56	3,86	.0001
Discharge Planning Experience	4.8	4.6	4.6	5.7	1.37	3,86	ns

1  
Mean Ratings using a 7-point scale (1=not familiar to 7= very familiar)

2  
MD=Physician (n = 20); RES=Resident (n = 11);  
RN=Nurse (n = 40); SW=Social Worker (n = 20).

sample. With the exception of hospice care, there were significant differences by profession among familiarity ratings of discharge options. Planned orthogonal contrasts were used to test hypotheses about where the differences in familiarity occurred across professional groups. It was hypothesized a priori that social workers would be most familiar with all discharge options and that familiarity should increase from residents, to physicians, to nurses, to social workers.

A priori contrasts supported the hypothesis that social workers were most familiar with all discharge options, with one exception: outpatient clinics. Social workers were least familiar with outpatient clinic as a discharge option, whereas physicians and residents were most familiar with this option. This makes sense intuitively, since physicians and residents typically schedule outpatient clinic appointments independent of any other discharge plans. Social workers are not able to schedule these appointments. Although no significant differences were found, the means for residents, physicians and nurses were in the right direction to support the hypothesis that in most instances, familiarity with discharge options was lowest for the residents, modest for physicians and nurses and highest for social workers. Even though Hines social workers were most familiar with the

discharge options available, all four professional groups claimed to be equally familiar with discharge planning ( $\bar{X} = 4.89$ ).

Familiarity ratings were also compared across physicians, nurses and social workers in the Loyola sample (see Table 4). There were fewer differences among familiarity ratings in the Loyola sample than there were among Hines participants. Loyola respondents did not significantly differ in their ratings of nursing home, community nursing care, outpatient clinics, or residential care. A priori contrasts were conducted on the remaining options to determine whether social workers were more familiar with these options than either physicians or nurses. As predicted, social workers were significantly more familiar with adult day care, lifeline, hospice and respite care than were the other professionals examined. Physicians and nurses did not significantly differ on familiarity with discharge options. Contrary to the Hines sample, Loyola social workers were also significantly more experienced with discharge planning ( $\bar{X} = 6.8$ ) than nurses and physicians ( $\bar{X} = 4.39$ ;  $t = -3.42$ ,  $df = 29$ ,  $p < .002$ ).

#### Choice of Discharge Option

For each of the 16 cases reviewed, respondents were asked to indicate what they considered to be the most appropriate discharge alternative. The number of times

TABLE 4

Familiarity with Decision Options (Loyola Sample)<sup>1</sup>

<u>Options</u>	<u>Professional Group</u> <sup>2</sup>			<u>F</u>	<u>df</u>	<u>p&lt;</u>
	<u>Physician</u>	<u>Nurse</u>	<u>Social Worker</u>			
Nursing Home	5.7	5.9	6.8	2.50	2,29	ns
Adult Day Care	1.7	2.7	4.2	5.26	2,29	.001
Community Nursing Care	5.3	6.4	6.9	2.69	2,29	ns
Lifeline	2.0	2.3	4.7	5.70	2,29	.01
Hospice	3.6	4.1	6.0	4.50	2,29	.05
Outpatient Clinic	6.7	5.5	5.9	1.85	2,29	ns
Residential Care	3.0	3.7	5.1	2.52	2,29	ns
Respite Care	1.6	1.6	4.4	12.99	2,29	.0001
Discharge Planning Experience	4.3	4.4	6.8	6.02	2,29	.01

<sup>1</sup>  
Mean ratings using a 7-point scale (1=not familiar to 7=very familiar)

<sup>2</sup>  
Physician (n =8); Nurse (n = 16); Social Worker (n = 9)

each discharge option was selected was totaled for each group and examined using chi-square analyses. Loyola participants selected community nursing care as the option of preference more often than did Hines respondents (61.5% vs. 54.2%, respectively) and conversely, were less likely to recommend nursing home placement than were their Hines counterparts (13% vs. 18%, respectively;  $\chi^2(4, n = 1968) = 40.94, p < .001$ , see Table 5). Furthermore, the Loyola sample had more missing data than did the Hines sample (4.3% vs. 1%, respectively). The overall frequencies of choices for the combined institutions began with community nursing as the most frequent choice (56.1%), through nursing home (16.7%), adult day care (14%) and least frequent, outpatient clinic appointments (11.4%).

Separate analyses of professionals' choices were also calculated for each institution. Hines professionals differed in their preferences for discharge across cases, as can be seen in Table 6 ( $\chi^2(12, n = 1456) = 40.01, p < .001$ ; This finding should be interpreted with caution, however, since chi-square analyses are not the most appropriate means of analyzing repeated-measures data). The most popular discharge option for all professional groups was community nursing care, which was selected for 54% of the total cases evaluated. Both social workers and residents considered adult day care to be a viable



TABLE 5

## Frequencies of Decision Choices by Institution

<u>Choice</u>	<u>Institution</u>		
	<u>Hines</u>	<u>Loyola</u>	<u>Total</u>
Nursing Home	262 (18.0%)	66 (12.9%)	328 (16.7%)
Community Nurse	789 (54.2%)	315 (61.5%)	1104 (56.1%)
Outpatient Clinic	175 (12.0%)	49 ( 9.5%)	224 (11.4%)
Adult Day Care	215 (14.8%)	60 (11.7%)	275 (14.0%)
Missing	15 ( 1.0%)	22 ( 4.3%)	31 ( 1.6%)
<b>TOTALS</b>	<b>1456</b>	<b>512</b>	<b>1968</b>

$$\chi^2 (4, \underline{n} = 1968) = 40.94, p < .001$$

TABLE 6

## Frequencies of Discharge Choices (Hines Sample)

Profession

<u>Choice</u>	<u>Physician</u>	<u>Resident</u>	<u>Nurse</u>	<u>Social Worker</u>	<u>Total</u>
Nursing Home	50 (15.6%)	27 (15.3%)	127 (19.8%)	58 (18.1%)	262 (18.0%)
Community Nurse	162 (50.6%)	88 (50.0%)	372 (58.1%)	167 (52.2%)	789 (54.2%)
Outpatient Clinics	58 (18.1%)	23 (13.1%)	62 (9.7%)	32 (10.0%)	175 (12.0%)
Adult Day Care	45 (14.1%)	34 (19.3%)	73 (11.4%)	63 (19.7%)	215 (14.8%)
Missing	5 (1.6%)	4 (2.3%)	6 (1.0%)	0 (0.0%)	15 (1.0%)
<b>TOTALS</b>	<b>320</b>	<b>176</b>	<b>640</b>	<b>320</b>	<b>1456</b>

<sup>2</sup>  
 $\chi^2 (12, n = 1456) = 40.01, p < .001$

alternative roughly one-fifth of the time. Nurses, however, felt that nursing home placement was the necessary plan in one-fifth of the cases they examined, whereas physicians were more likely to choose outpatient clinic appointments as their discharge strategy (18%).

Loyola respondents provided a slightly different pattern of overall discharge plans. Once again, community nursing care was considered the most appropriate discharge plan in 62% of all decisions made ( $\chi^2(8, n = 512) = 47.70, p < .001$ ; see Table 7). Both nurses and social workers chose nursing home placement as their second most frequent plan of discharge (14% and 12%, respectively). Unfortunately, the social work sample was hindered with a missing data rate of 11%. Once again, physicians considered outpatient clinic appointments to be appropriate 18% of the time.

### Summary

The Hines and Loyola samples were similar in demographic characteristics. Differences across professional groups tended to be profession-specific. Social workers were most familiar with the discharge options examined, with one exception: outpatient clinics. All professional groups were somewhat familiar with discharge planning. Community nursing care was the most commonly selected discharge option across all sixteen cases for all professional groups.

TABLE 7

## Frequencies of Discharge Choices (Loyola Sample)

<u>Choice</u>	<u>Profession</u>			<u>Total</u>
	<u>Physician</u>	<u>Nurse</u>	<u>Social Work</u>	
Nursing Home	13 (11.6%)	36 (14.1%)	17 (11.8%)	66 (12.9%)
Community Nurse	59 (52.7%)	157 (61.3%)	99 (68.8%)	315 (61.5%)
Outpatient Clinics	20 (17.8%)	25 ( 9.8%)	4 ( 2.8%)	49 ( 6.6%)
Adult Day Care	19 (17.0%)	33 (12.9%)	8 ( 5.6%)	60 (11.7%)
Missing	1 ( 0.1%)	5 ( 2.0%)	16 (11.1%)	22 ( 4.3%)
<b>TOTALS</b>	<b>112</b>	<b>256</b>	<b>144</b>	<b>512</b>

$$\chi^2 (8, n = 512) = 47.70, p < .001$$

Due to the small number of responses from the Loyola sample, the effect of institution on discharge decisions was not examined. The remaining analyses were conducted on the Hines sample only.

#### Ratings of Discharge Options

After reading each case, respondents were asked to rate the appropriateness of five discharge options: nursing home, community nursing care, outpatient clinics, adult day care and no further care required, using 7-point scales (1=not appropriate to 7=very appropriate). These five options were rated for each of the 16 cases, producing a multiple dependent measure repeated-measures design. Ratings were also examined by professional group, introducing a between-groups factor to the four within-subjects factors included in the sixteen cases. The data were analyzed using the multivariate analysis of variance (MANOVA) package in SPSS-X. MANOVA allows one to evaluate the mean differences on two or more dependent measures while controlling for individual differences and for Type I errors (Bray & Maxwell, 1985).

Prior to initiation of the multivariate analysis, cell means were examined for each discharge option: nursing home, community nurse, outpatient clinic, adult day care and no further care to assess the descriptive characteristics of the data. The fifth option, no further

care, was dropped from further analyses after an examination of cell means revealed that its mean rating across the 16 cases was only 1.10 ( $sd = .05$ ) on a 7-point scale. Clearly, respondents felt that the patients portrayed in the case vignettes required some type of follow-up care after discharge.

The remaining options were analyzed simultaneously using MANOVA. Table 8 displays the results of the doubly multivariate repeated measures design with the between-subjects factor of profession. Profession did not significantly influence appropriateness ratings across the four discharge categories considered, nor did profession significantly interact with any of the other variables of interest. Univariate  $F$ -tests for profession by discharge option were also nonsignificant.

Profession in this research study was considered a proxy for expertise in discharge planning. However, expertise was also measured directly by asking respondents to rate their degree of experience with discharge planning. The correlation between this rating and with the appropriateness ratings of each of the four discharge options across the 16 case scenarios was computed. Only four (6%) of the 64 Pearson correlation coefficients calculated reached significance at the .05 level, a result that would be expected by chance alone. This further

TABLE 8

Multivariate Analysis of Variance Results for  
Appropriateness Ratings Across Discharge Options

	<u>Pillais-Bartlett</u> <u>Trace F</u>	<u>df</u>	<u>p&lt;</u>
<u>Between-Subjects Effect</u>			
A. Profession	1.72	12,204	.10
<u>Within-Subjects Effects</u>			
A. Main Effects:			
1. Physical Impairment	13.34	4,66	.001
2. Caregiver Availability	21.43	4,66	.001
3. Follow-up Care	10.53	4,66	.001
4. Patient Compliance	16.00	4,66	.001
B. 2-way Interactions:			
1. Physical Impairment x Caregiver Availability	2.11	4,66	.10
2. Physical Impairment x Follow-up Care	1.05	4,66	ns
3. Physical Impairment x Patient Compliance	2.02	4,66	ns
4. Caregiver Availability x Follow-up Care	6.52	4,66	.001
5. Caregiver Availability x Patient Compliance	3.72	4,66	.01
6. Follow-up Care x Patient Compliance	2.08	4,66	.10

TABLE 8 (cont'd)

Multivariate Analysis of Variance Results for  
Appropriateness Ratings Across Discharge Options

	<u>Pillais-Bartlett</u> <u>Trace F</u>	<u>df</u>	<u>p&lt;</u>
C. 3-way Interactions:			
1. Physical Impairment x Caregiver Availability x Follow-up Care	1.90	4,66	ns
2. Physical Impairment x Caregiver Availability x Patient Compliance	1.22	4,66	ns
3. Physical Impairment x Follow-up Care x Patient Compliance	1.12	4,66	ns
4. Caregiver Availability x Follow-up Care x Patient Compliance	2.50	4,66	ns
D. 4-way Interaction:			
1. Physical Impairment x Caregiver Availability x Follow-up Care x Patient Compliance	< 1	4,66	ns



supports the finding that experience was not related to discharge planning outcomes.

Caregiver availability and patient characteristics did have a strong impact on appropriateness ratings, however. As expected, the main effects of all four within-subjects factors: physical impairment, caregiver availability, follow-up care and patient compliance, were significant across discharge options. Two 2-way interactions involving caregiver availability were also significant, caregiver availability x follow-up care and caregiver availability x patient compliance. The existence of an overall effect for patient case characteristics while controlling for the possibility of Type I error provides the justification for examining the effects of the within-subjects factors on each discharge option in more detail using individual repeated-measures ANOVAs.

Nursing home care. The effects of degree of physical (ADL) impairment, caregiver availability, amount of follow-up care and extent of patient compliance on appropriateness ratings of nursing home care were examined using univariate statistics. Univariate F-tests for all possible combinations of effects are presented in Table 9. As was true with the overall MANOVA design, all four main effects were significant, as were two interaction effects: (1) caregiver availability x patient compliance and (2)

TABLE 9

Analysis of Variance Results  
for Nursing Home Care Ratings

Univariate F-tests (df = 1,74)

<u>Within-Subjects Effects</u>	<u>F</u>	<u>p</u> <
<b>A. Main Effects:</b>		
1. Physical Impairment	54.42	.0001
2. Caregiver Availability	54.76	.0001
3. Follow-up Care	42.95	.0001
4. Patient Compliance	66.34	.0001
<b>B. 2-Way Interactions:</b>		
1. Physical Impairment x Caregiver Availability	3.01	.10
2. Physical Impairment x Follow-up Care	< 1	ns
3. Physical Impairment x Patient Compliance	3.88	.10
4. Caregiver Availability x Follow-up Care	< 1	ns
5. Caregiver Availability x Patient Compliance	4.42	.05
6. Follow-up Care x Patient Compliance	4.83	.05
<b>C. 3-Way Interactions:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care	< 1	ns
2. Physical Impairment x Caregiver Availability x Patient Compliance	< 1	ns
3. Physical Impairment x Follow-up Care x Patient Compliance	2.26	ns
4. Caregiver Availability x Follow-up Care x Patient Compliance	2.02	ns
<b>D. 4-Way Interaction:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care x Patient Compliance	< 1	ns

follow-up care x patient compliance.

Simple effects tests were calculated for the significant interactions. In accordance with previous research, caregiver availability significantly influenced nursing home ratings regardless of the extent of patient compliance (see Table 10). Nursing home care was considered more appropriate when the caregiver was not available to care for the patient, and this effect was stronger when the patient was noncompliant. Patients requiring a great deal of follow-up care were considered more appropriate for nursing home care, regardless of patient compliance, than were patients who needed minimal follow-up care. Nursing home ratings of heavy care patients increased even more when the patient was noncompliant (see Table 11).

As predicted, the main effect of physical (ADL) impairment was also significant for nursing home ratings. Nursing home care was considered more appropriate when the patient was severely impaired in ADL functioning ( $\bar{X} = 3.63$ ) than when the patient had few physical impairments ( $\bar{X} = 2.79$ ).

Community nursing care. Significant univariate within-group effects on community nursing care ratings are presented in Table 12. Three two-way interactions involving caregiver availability were significant at  $p < .05$ .

TABLE 10

Simple Effects Analysis of the Caregiver  
Availability x Patient Compliance Interaction on  
Nursing Home Care

<u>Simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
A. Patient Compliant		57.65	1,110	.001
1. Caregiver Available	2.32			
2. Caregiver Unavailable	3.23			
B. Patient Noncompliant		107.22	1,117	.001
1. Caregiver Available	2.99			
2. Caregiver Unavailable	4.27			

TABLE 11

Simple Effects Analysis of the Follow-up Care  
 x Patient Compliance Interaction on  
 Nursing Home Care

<u>Simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
A. Patient Compliant		27.62	1,110	.001
1. Light Follow-up Care	2.55			
2. Heavy Follow-up Care	3.00			
B. Patient Noncompliant		64.44	1,117	.001
1. Light Follow-up Care	3.30			
2. Heavy Follow-up Care	3.96			

TABLE 12

Analysis of Variance Results for  
Community Nursing Care Ratings

Univariate F-tests (df = 1,82)

<u>Within-Subject Effects</u>	<u>F</u>	<u>p</u> <
<b>A. Main Effects:</b>		
1. Physical Impairment	< 1	ns
2. Caregiver Availability	7.46	.01
3. Follow-up Care	3.46	.10
4. Patient Compliance	1.95	ns
<b>B. 2-Way Interactions:</b>		
1. Physical Impairment x Caregiver Availability	4.13	.05
2. Physical Impairment x Follow-up Care	3.17	.10
3. Physical Impairment x Patient Compliance	1.11	ns
4. Caregiver Availability x Follow-up Care	14.65	.0001
5. Caregiver Availability x Patient Compliance	9.70	.01
6. Follow-up Care x Patient Compliance	3.59	.10
<b>C. 3-Way Interactions:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care	1.82	ns
2. Physical Impairment x Caregiver Availability x Patient Compliance	2.08	ns
3. Physical Impairment x Follow-up Care x Patient Compliance	< 1	ns
4. Caregiver Availability x Follow- up Care x Patient Compliance	1.34	ns
<b>D. 4-Way Interaction:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care x Patient Compliance	< 1	ns

Caregiver availability interacted with follow-up care, physical impairment, and patient compliance. The main effect of caregiver availability was also significant, but cannot be directly interpreted due to the significant interaction effects.

Simple effects tests were computed for each significant interaction. Regardless of degree of physical impairment, the simple main effect of caregiver availability was significant (see Table 13), confirming the hypothesis that caregiver availability strongly effects discharge decisions. Community nursing care was considered more appropriate for the patient when the caregiver was available to care for the patient. An examination of the caregiver x follow-up care interaction revealed that caregiver availability did not influence community nursing care ratings when the patient required little follow-up care. However, when the hypothetical patient did require a great deal of follow-up care, once again, an available caregiver resulted in higher appropriateness ratings for community nursing care (see Table 14). Lastly, the significant caregiver availability x patient compliance interaction was also examined using simple effects analyses. As expected, an available caregiver yielded a higher rating for community nursing care when the patient was noncompliant than did an unavailable caregiver (see

TABLE 13

Simple Effects Analysis of the Caregiver Availability  
 x Physical Impairment Interaction for  
 Community Nursing Care

<u>Simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
A. Low Physical Impairment		4.19	1,118	.05
1. Caregiver Available	5.88			
2. Caregiver Unavailable	5.66			
B. High Physical Impairment		25.14	1,117	.001
1. Caregiver Available	5.99			
2. Caregiver Unavailable	5.44			



TABLE 14

Simple Effects Analysis of the Caregiver Availability  
 x Follow-up Care Interaction on Community  
 Nursing Care

<u>Simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
A. Light Follow-up Care		2.27	1,117	ns
1. Caregiver Available	5.74			
2. Caregiver Unavailable	5.58			
B. Heavy Follow-up Care		31.27	1,119	.001
1. Caregiver Available	6.14			
2. Caregiver Unavailable	5.52			

Table 15). When the patient was compliant, however, caregiver availability did not influence appropriateness ratings.

Outpatient clinic care. The univariate effects of degree of physical impairment, caregiver availability, follow-up care required and degree of patient compliance, on appropriateness of outpatient clinic as a discharge option were also tested. Table 16 displays univariate F-tests for significant effects. Five effects were significant, including: a 3-way interaction of caregiver availability x follow-up care x patient compliance; a two-way interaction of physical impairment x caregiver availability; and the main effects of caregiver availability, physical impairment and patient compliance. Because all three main effects also appear in significant interaction effects, their impact on appropriateness ratings was examined using simple effects tests.

The three-way interaction effect on outpatient clinic ratings was not tested further because there were no a priori hypotheses regarding any three-way interaction effects on outpatient clinic choice. Simple effects analyses were used, however, to interpret the two-way physical impairment x caregiver availability interaction. As one would expect, outpatient clinic care was considered more appropriate when the caregiver was available,

TABLE 15

Simple Effects Analysis of the Caregiver Availability x  
Patient Compliance Interaction on  
Community Nursing Care

<u>Simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
A. Patient Compliant		1.78	1,120	ns
1. Caregiver Available	5.86			
2. Caregiver Unavailable	5.71			
B. Patient Noncompliant		30.02	1,117	.001
1. Caregiver Available	6.02			
2. Caregiver Unavailable	5.39			

TABLE 16

Analysis of Variance Results for  
Outpatient Clinic Ratings

Univariate F-tests (df = 1,77)

<u>Within Subjects Effects</u>	<u>F</u>	<u>p</u> <
<b>A. Main Effects:</b>		
1. Physical Impairment	7.00	.01
2. Caregiver Availability	23.57	.001
3. Follow-up Care	2.26	ns
4. Patient Compliance	16.94	.001
<b>B. 2-Way Interactions:</b>		
1. Physical Impairment x Caregiver Availability	5.69	.05
2. Physical Impairment x Follow-up Care	< 1	ns
3. Physical Impairment x Patient Compliance	< 1	ns
4. Caregiver Availability x Follow-up Care	< 1	ns
5. Caregiver Availability x Patient Compliance	3.36	.10
6. Follow-up Care x Patient Compliance	< 1	ns
<b>C. 3-way Interactions:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care	< 1	ns
2. Physical Impairment x Caregiver Availability x Patient Compliance	< 1	ns
3. Physical Impairment x Follow-up Care x Patient Compliance	< 1	ns
4. Caregiver Availability x Follow- up Care x Patient Compliance	6.43	.05
<b>D. 4-Way Interaction:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care x Patient Compliance	< 1	ns

regardless of the patient's degree of physical impairment (see Table 17).

Adult day care. Respondents' appropriateness ratings for adult day care were influenced by a combination of factors. Table 18 displays significant univariate results, including three three-way interactions involving physical impairment: (1) caregiver availability x patient compliance x physical impairment; (2) caregiver availability x follow-up care x physical impairment; and (3) follow-up care x patient compliance x physical impairment. Some two-way interactions and main effects were also significant; however, since they were included within the significant three-way interactions, simple effects analyses were used to interpret these findings.

No additional analysis was conducted for the follow-up care x patient compliance x physical impairment interaction because no three-way interactions had been hypothesized a priori and the interaction did not appear to be particularly meaningful for explaining the discharge planning process. The remaining three-way interactions were subjected to a simple effects tests because both interactions contained caregiver availability, the factor that was most likely to influence decisions about the appropriateness of adult day care. As predicted, a simple main effect for caregiver availability was identified when

TABLE 17

Simple Effects Analysis of Physical Impairment x  
 Caregiver Availability Interaction on  
 Outpatient Clinic Care

<u>simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
A. Low Physical Impairment		22.16	1,114	.001
1. Caregiver Available	5.75			
2. Caregiver Unavailable	5.44			
B. High Physical Impairment		50.26	1,114	.001
1. Caregiver Available	5.74			
2. Caregiver Unavailable	5.14			

TABLE 18

Analysis of Variance Results for  
Adult Day Care Ratings

Univariate F-tests (df = 1,81)

<u>Within-Subjects Effect</u>	<u>F</u>	<u>p</u> <
<b>A. Main Effects:</b>		
1. Physical Impairment	< 1	ns
2. Caregiver Availability	33.44	.001
3. Follow-up Care	2.65	.10
4. Patient Compliance	< 1	ns
<b>B. 2-way Interactions:</b>		
1. Physical Impairment x Caregiver Availability	< 1	ns
2. Physical Impairment x Follow-up Care	< 1	ns
3. Physical Impairment x Patient Compliance	< 1	ns
4. Caregiver Availability x Follow-up Care	6.80	.05
5. Caregiver Availability x Patient Compliance	4.11	.05
6. Follow-up Care x Patient Compliance	6.67	.05
<b>C. 3-way Interactions:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care	5.00	.05
2. Physical Impairment x Caregiver Availability x Patient Compliance	4.43	.05
3. Physical Impairment x Follow-up Care x Patient Compliance	4.19	.05
4. Caregiver Availability x Follow- up Care x Patient Compliance	1.35	ns
<b>D. 4-Way Interaction:</b>		
1. Physical Impairment x Caregiver Availability x Follow-up Care x Patient Compliance	< 1	ns

the caregiver x follow-up care x physical impairment interaction was examined. Regardless of degree of physical impairment or amount of follow-up care required, the appropriateness of adult day care increased when the caregiver was not available during the day to care for the patient (see Table 19). Adult day care was considered less appropriate when the caregiver was available to care for the patient.

The last three-way interaction, caregiver availability x patient compliance x physical impairment, was also tested for simple effects because the impact of caregiver availability and ADL impairment on discharge planning has consistently been documented in the literature. Lack of an available caregiver and/or increased patient physical impairment are good predictors of institutionalization. When the patient was compliant, the simple main effect of caregiver availability was significant (see Table 20). Adult day care received higher ratings when the caregiver was not available ( $\bar{X} = 4.46$ ), then when she was home to care for the patient ( $\bar{X} = 3.18$ ). However, when patients were noncompliant, the simple interaction of physical impairment x caregiver availability was also significant.

This interaction was further simplified into simple main effects. Partially confirming hypotheses, the simple



TABLE 19

Simple Effects Analysis of the Physical Impairment x  
Caregiver Availability x Follow-up Care on  
Adult Day Care

<u>Simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
A. Light Follow-up Care				
1. Physical Impairment		< 1	1,117	ns
2. Caregiver Availability		78.48	1,117	.001
Available	3.10			
Unavailable	4.61			
3. Physical Impairment x Caregiver Availability		2.89	1,117	ns
B. Heavy Follow-up Care				
1. Physical Impairment		< 1	1,115	ns
2. Caregiver Availability		51.83	1,115	.001
Available	3.22			
Unavailable	4.22			
3. Physical Impairment x Caregiver Availability		< 1	1,115	ns

TABLE 20

Simple Effects Analysis of the Physical Impairment  
 x Caregiver Availability x Patient Compliance  
 Interaction on Adult Day Care

<u>Simple Effect</u>	<u>Means</u>	<u>F</u>	<u>df</u>	<u>p&lt;</u>
<b>A. Patient Compliant</b>				
1. Physical Impairment		< 1	1,118	ns
2. Caregiver Availability		81.65	1,118	.001
Available	3.18			
Unavailable	4.46			
3. Physical Impairment x Caregiver Availability		1.54	1,118	ns
<b>B. Patient Noncompliant</b>				
1. Physical Impairment		< 1	1,118	ns
2. Caregiver Availability		49.09	1,118	.001
Available	3.23			
Unavailable	4.24			
3. Physical Impairment x Caregiver Availability		5.58	1,118	.05
Low/Available	3.19			
Low/Unavailable	3.26			
High/Available	4.41			
High/Unavailable	4.06			

main effect of caregiver availability was significant whether the patient was only slightly impaired in physical functioning or was significantly impaired in functioning. No main effect of physical impairment was identified. Once again, the appropriateness ratings for adult day care were higher when the caregiver was unavailable during the day.

Summary of Appropriateness Ratings. Appropriateness ratings for the four discharge options did not differ by professional group. Patient characteristics did influence appropriateness ratings of discharge options. Nursing home care ratings were most strongly influenced by caregiver availability. An unavailable caregiver resulted in higher (i.e., more appropriate) ratings for nursing home care. Caregiver availability was also an important factor in community nursing care ratings, as was the amount of follow-up care required. Community nursing care was considered more appropriate when the caregiver was available to care for the patient than when the caregiver was unavailable. Patients requiring a great deal of follow-up care were also considered more appropriate for community nursing care, but appropriateness ratings decreased when the caregiver was unavailable. Both follow-up care and caregiver availability influenced outpatient clinic ratings. Outpatient clinic care was considered more appropriate when the caregiver was

available and when the patient required little follow-up care than when the caregiver was unavailable or when the patient needed a great deal of follow-up care. Lastly, adult day care was most influenced by caregiver availability. An unavailable caregiver resulted in higher ratings of adult day care across all other conditions. Caregiver availability was the most important factor in all discharge option considerations.

#### Selecting the Best Discharge Option

After respondents read a particular case and rated the discharge options using 7-point scales, they were also asked to select the one discharge option that they considered most appropriate for the fictitious patient in the case scenario. The same procedure was followed for each of the 16 cases evaluated. To examine how final choices differed by professional group and by the within-group variables embedded in the 16 cases, log-linear analyses were calculated using Biomedical Data Processing (BMDP) statistical software. Log-linear analysis allows one to statistically examine relationships among variables in multiway crosstabulations and is analogous to multiple regression for interval-level data. The traditional way to examine the association between two categorical variables has been to calculate percentages within categories and look for significant differences in percentages using

chi-square analyses. Log-linear analyses, however, allow us to examine more than two variables at one time. Cell frequencies are reconceptualized as odds ratios, the ratio between the frequency of being in one category and the frequency of not being in that category (Knoke & Burke, 1983). Likelihood-ratio chi-square analyses are used to test the association between the data and the models fitted to the data.

The purpose of this analysis was to determine how the relationship among the within-group variables (i.e., degree of physical impairment, caregiver availability, amount of follow-up care required and degree of patient compliance) and the between-groups factor (i.e., professional group) affected choice of the most appropriate discharge option across the 16 cases. There are several methods of identifying a model that best represents the observed frequencies. One method is to begin with a saturated model in which all effects have been included and then to delete effects systematically. Higher-order interaction effects are deleted successively and each new model tested until the fit of the model to the data is no longer acceptable (i.e., when the difference between (1) the frequencies generated by the particular model and (2) the actual data is statistically significant,  $p < .05$ ). Conversely, an additive approach begins with the simplest model (i.e.,

main effects only) and higher-order effects are successively added in a stepwise fashion until an acceptable fit is obtained that cannot be improved by adding additional terms (Knoke & Burke, 1983). In either case, there is a trade-off between identifying the closest possible fit to the data and finding a model that is parsimonious. When trying to find the best-fitting model, it is desirable to have a low likelihood ratio value ( $L^2$ ) relative to degrees of freedom (Dixon et al., 1983).

It should be noted that log-linear analysis is not designed to handle repeated-measures data; individual differences cannot be controlled within subjects. Therefore, the likelihood of systematic bias increases when a repeated-measures design is treated as between-groups data. Nevertheless, log-linear analysis currently provides the most sophisticated method to analyze the present study's categorical data.

In the present analysis, a simple model containing the fixed repeated measures structure (i.e., profession, caregiver availability, degree of physical impairment, amount of follow-up care, patient compliance) and the response factor (i.e., discharge choice) were entered initially in the log-linear analysis. Effects were added in a simple-effect manner; that is, at each step the increment of a single effect was tested. The additive

approach was selected over the deletion approach, in which one effect is deleted at a time, due to the inherent fixed structure of the data being tested. Table 21 outlines the best-fitting model identified at each step of model testing. The most parsimonious model was identified in step 2, but this model only marginally represented the data ( $p = .052$ ). Successive models provided increasingly better fits to the data at the expense of parsimony. In an attempt to compromise between parsimony and fit, the model identified in step 3 was selected as the best representation of respondents' decisions. This model consisted of three main effects: caregiver availability, patient compliance and follow-up care required as functions of the response factor ( $L^2 = 212.18$ ,  $df = 180$ ,  $p > .309$ ). The same conclusion was reached when the saturated model was entered first and lower-order effects were deleted successively.

An attempt was also made to fit the model based on the known role of certain variables identified in the literature and what was hypothesized in this research. The effect of professional group (as a function of choice) was entered into the simple model first, but profession did not improve the fit of the model. The second variable entered was caregiver availability as a function of choice. Although this decreased the likelihood-ratio value

Table 21

Loglinear Analysis of Decision Choices  
Using Simple Effects Addition

<u>STEP</u>	<u>MODEL</u> <sup>1</sup>	<u>Likelihood-Ratio Chi-Square Value</u>	<u>df</u>	<u>p&lt;</u>
	PACFK, T	541.52	189	.001
1	PACFK, CT	277.32	186	.001
2	PACFK, CT, KT	215.14	183	.052
3	PACFK, CT, KT, FT	188.94	180	.309
4	PACFK, CT, KT, FT, AT	163.98	177	.764
5	PACFK, CT, KT FT, AT, PT	131.83	168	.976

1

P = Professional Group  
 A = Degree of ADL Impairment  
 C = Caregiver Availability  
 F = Amount of Follow-up Care Required  
 K = Degree of Patient Compliance  
 T = Choice of Discharge Plan  
 PACFK = Fixed Structure of the  
         Repeated Measures Design



significantly compared to degrees of freedom, the proposed model did not represent the data adequately. Other combinations of factors were attempted, resulting in the same conclusion as was found for the simple additive effects strategy: the main effects of caregiver availability, patient compliance and follow-up care had the most influence over discharge choices. Professional affiliation effected choices for discharge only after the main effects of the four within-group variables were entered into the model.

These main effect findings can be examined more closely using frequency tables of choice outcomes. The main effect of caregiver availability on discharge choice is presented in Table 22. For the eight cases in which the caregiver was available, respondents selected community nursing care as the appropriate discharge option 70% of the time and rarely selected either adult day care (5%) or nursing home placement (7%). However, when the caregiver was no longer available to care for the patient during the day, the appropriateness of community visiting nurse decreased to 40%. Both nursing home placement and adult day care were each considered appropriate in one-quarter of the cases examined. The lack of an available caregiver was more likely to result in a decision for some type of institutional supervision (i.e., nursing home or adult day

Table 22

Effect of Caregiver Availability on Selection  
of Discharge Plan

<u>Discharge Choice</u>	<u>Caregiver Available</u>		<u>Caregiver Not Available</u>	
	<u>N</u>	<u>(%)</u> <sup>1</sup>	<u>N</u>	<u>(%)</u>
Nursing Home	51	( 7.6)	200	(28.2)
Community Nursing Care	499	(68.9)	280	(39.5)
Outpatient Clinic	130	(18.2)	49	( 6.9)
Adult Day Care	35	( 4.9)	179	(25.3)

<sup>1</sup>  
% represents the percent of time each option was selected for each caregiver condition.

Table 23

Effect of Patient Compliance on Selection  
of Discharge Plan

<u>Discharge Choice</u>	<u>Patient Compliance</u>		<u>Patient Noncompliance</u>	
	<u>N</u>	<u>(%)</u>	<u>N</u>	<u>(%)</u>
Nursing Home	72	(10.1)	179	(25.2)
Community Nursing Care	413	(57.9)	366	(51.5)
Outpatient Clinic	115	(16.1)	64	( 9.0)
Adult Day Care	113	(15.8)	101	(14.2)

<sup>1</sup>  
% represents the percent of time each option was selected under each patient condition.

care) than were situations in which the caregiver was home during the day to care for the patient.

Patient compliance had an unexpected effect on choice outcomes. Table 23 presents the frequencies of discharge choices by degree of patient compliance. Community nursing care was selected in over 50% of the cases evaluated regardless of the degree of patient compliance. However, nursing home placement decisions were strongly influenced by the degree of patient compliance. In cases where the patient was compliant with his medical treatment, respondents rarely chose nursing home placement (10%). Yet, when the patient was noncompliant, nursing home care was deemed appropriate in one-quarter of the cases evaluated.

The effect of follow-up care on selection of discharge plan was relatively minor. The frequencies of discharge choice by amount of follow-up care required is presented in Table 24. Nursing home care and community nursing care were considered more appropriate than either outpatient clinic or adult day care when the patient required a great deal of follow-up care. This is consistent with the effect of follow-up care on appropriateness ratings.

Summary of Discharge Choice. When a final decision for discharge was required, choices were influenced by

Table 24

Effect of Follow-up Care Needs on  
Selection of Discharge Plan

<u>Discharge Choice</u>	<u>Light Follow-up Care</u>		<u>Heavy Follow-up Care</u>	
	<u>N</u>	<u>(%)</u> <sup>1</sup>	<u>N</u>	<u>(%)</u>
Nursing Home	104	(14.6)	147	(20.6)
Community Nursing Care	369	(51.9)	410	(57.6)
Outpatient Clinic	115	(16.2)	64	( 9.0)
Adult Day Care	123	(17.3)	91	(12.8)

1

% represents the percent of time each option was selected under each patient condition.

caregiver availability, patient compliance and follow-up care. An available caregiver usually resulted in the selection of community nursing care, whereas an unavailable caregiver resulted in a decision for institutional care. A noncompliant patient was more often selected for nursing home placement than a patient who was compliant with his medical treatment. More intensive care discharge options (i.e., nursing home, community nursing care) were selected when the patient required a great deal of follow-up care than when the patient did not need a great deal of care.

## DISCUSSION

Adopting the judgment approach to studying decision making, this study examined how various medical professionals utilized salient patient characteristics to make discharge decisions. Multivariate analyses were used to detect main effects and interaction effects of patient characteristics and to identify the effect of expertise on discharge planning decisions.

### Expertise in Decision Making

In this study expertise was defined as professional affiliation. It was hypothesized that social workers would be most familiar with available discharge options and with the discharge planning process in general and that their expertise might cause them to differ in their decision strategies from other medical professions surveyed. Although social workers were more familiar with various discharge options than either physicians, medical residents or nurses, these groups did not differ in either their utilization of data for discharge planning, or the actual discharge decisions made.

There are at least two plausible reasons for the lack of an expertise effect on discharge planning strategies.

First, it is quite likely that profession was not a good definition of expertise. Supporting this interpretation, professional groups claimed to be equally familiar with discharge planning. Indeed, if groups are equally familiar with discharge planning, one would not expect an effect of expertise via profession on decision making. Substituting self-reported familiarity with discharge planning for professional affiliation did not change the results. Expertise was uncorrelated with all of the outcomes assessed (i.e., nursing home care, community nursing care, outpatient clinic and adult day care). Thus, the hypothesis that discharge planning is influenced by expertise was not supported by the present data regardless of whether profession or self-reported familiarity with discharge planning was used to represent expertise.

A second explanation for the lack of an expertise effect on discharge planning decisions may be related to the nature of discharge planning. Planning for follow-up care services is typically a group process involving the patient, the family and several medical professionals. Since the responsibility for discharge planning is shared, no one person stands out as the expert. Although this survey was designed as an individual decision task, participants may have responded as though they were participating as a member of a discharge planning team.



Futhermore, the discharge planning process represents a somewhat unique decision making situation. Unlike many decision making situations, discharge planning does not necessarily result in decisions that are right or wrong. In addition, the initial discharge plan can be reversed at a later time relatively easily compared to most medical decisions (e.g., surgery, drug treatment). It is therefore, difficult to objectively measure expertise when there is no easily measured criterion of success (i.e., right and wrong decisions) on which to compare respondents.

An effect for profession was noted, however, when final 'forced choice' decisions were examined across cases by profession. Profession influenced final choices after the main effects of patient characteristics were taken into account. The existence of a profession effect on frequency of choices may be related to the availability heuristic. The availability heuristic refers to the fact that the ease by which instances of some event can be brought to mind is a function of the frequency or probability of that event. However, retrieval may also be influenced by familiarity or salience of instances that are unrelated to true frequencies.

The most frequent choice for follow-up care across all groups was community nursing care. Community nursing care is indeed a commonly employed discharge plan for

patients in need of further care and, thus, is probably easily brought to mind. However, in those scenarios where the most frequent final choice was something other than community nursing care, choices differed by profession. To some extent, these remaining choices were influenced by professionals' familiarity with discharge options. Physicians were most familiar with outpatient clinic care and consequently selected outpatient clinic care more often than any other discharge option in the remaining cases reviewed. Nurses, on the other hand, were most familiar with nursing home care, and they in turn selected nursing home more frequently than any other discharge option when community nursing care was considered inappropriate. The relationship between familiarity and selection did not hold for either social workers or residents, however. Both of these groups selected adult day care for two-fifths of the remaining cases examined, but neither group was highly familiar with this option.

It is not clear why social workers and residents selected adult day care over other more familiar options. It is likely that neither physicians nor nurses are regularly exposed to the latest innovations in follow-up care. However, it is more feasible that both social workers and residents are regularly introduced to recent additions to the collection of available discharge care

programs. Social workers need to be continually abreast of discharge options as a function of their jobs; residents, fresh from medical school, are regularly introduced to the newest innovations. It may be that these groups had heard positive things about adult day care as an alternative to traditional types of care, and that they chose adult day care when they considered the situation to be inappropriate for community nursing care.

There does appear to be a subtle effect of professional affiliation on final decision choices. Professionals tend to select the discharge option with which they were most familiar. Profession, however, did not effect the strategies employed in discharge planning, which is elaborated on in the subsequent discussion. The primary influence on discharge planning strategies is the effect of patient characteristics.

#### Patient Characteristics and Decision Making

The four patient characteristics manipulated across the 16 cases significantly influenced appropriateness ratings of the four decision options. Although there were overall main effects of patient characteristics on discharge choices, the influence of these variables was not consistent across discharge alternatives. As has been true in other areas of clinical problem solving and decision making (e.g., Dawes, 1971; Einhorn, 1972; Goldberg, 1979;

Meehl, 1959), respondents in this study did not use patient cues in a consistent manner to make discharge plans. Clearly, decision making in long-term care planning is an inexact science.

Despite inconsistencies in cue use, however, a certain decision strategy emerged when appropriateness ratings of nursing home, community nurse, outpatient clinic and adult day care were examined. These four options can be regarded as representing two different care settings: institutional care (i.e., nursing home care and adult day care) and community care (i.e., community nursing care and outpatient clinics). Caregiver availability exerted the most influence over which of these two types of discharge care settings was selected. Institutional care was considered more appropriate when the caregiver was not available during the day to care for the patient, whereas community care was regarded as the more appropriate setting when the caregiver was available.

Caregiver availability also strongly influenced respondents' final decision for discharge in each case. Community care programs, especially community nursing care, were selected in the majority of situations in which the caregiver was available. However, when the caregiver was unavailable, nursing home and adult day care together accounted for over 50% of the choices made for discharge.

This effect of caregiver availability has repeatedly been found in the literature examining institutionalized versus non-institutionalized elderly (e.g., Nielson et al., 1972; Palmore, 1976), in predicting long-term care placement (Branch & Jette, 1982) and in planning home care services (e.g., Sager, 1983). Medical professionals apparently feel that a patient who requires some type of follow-up care is best cared for when there is either someone (i.e., the caregiver) or some place (i.e., an institution) available to look after the patient.

Whereas caregiver availability differentiated between an institutional care setting versus a community care setting in respondents' decisions, other patient characteristics influenced decisions within these settings. Specifically, adult day care was considered appropriate when the caregiver was unavailable and when the patient was severely impaired in physical functioning. This makes intuitive sense when one considers that a patient impaired in functioning requires some type of assistance or supervision, but does not necessarily require a great deal of medical or nursing care. Adult day care can provide this assistance when a caregiver does not exist. However, when the patient's care became more complex (i.e., heavy follow-up care required, noncompliant patient) in combination with the lack of a caregiver and with severe

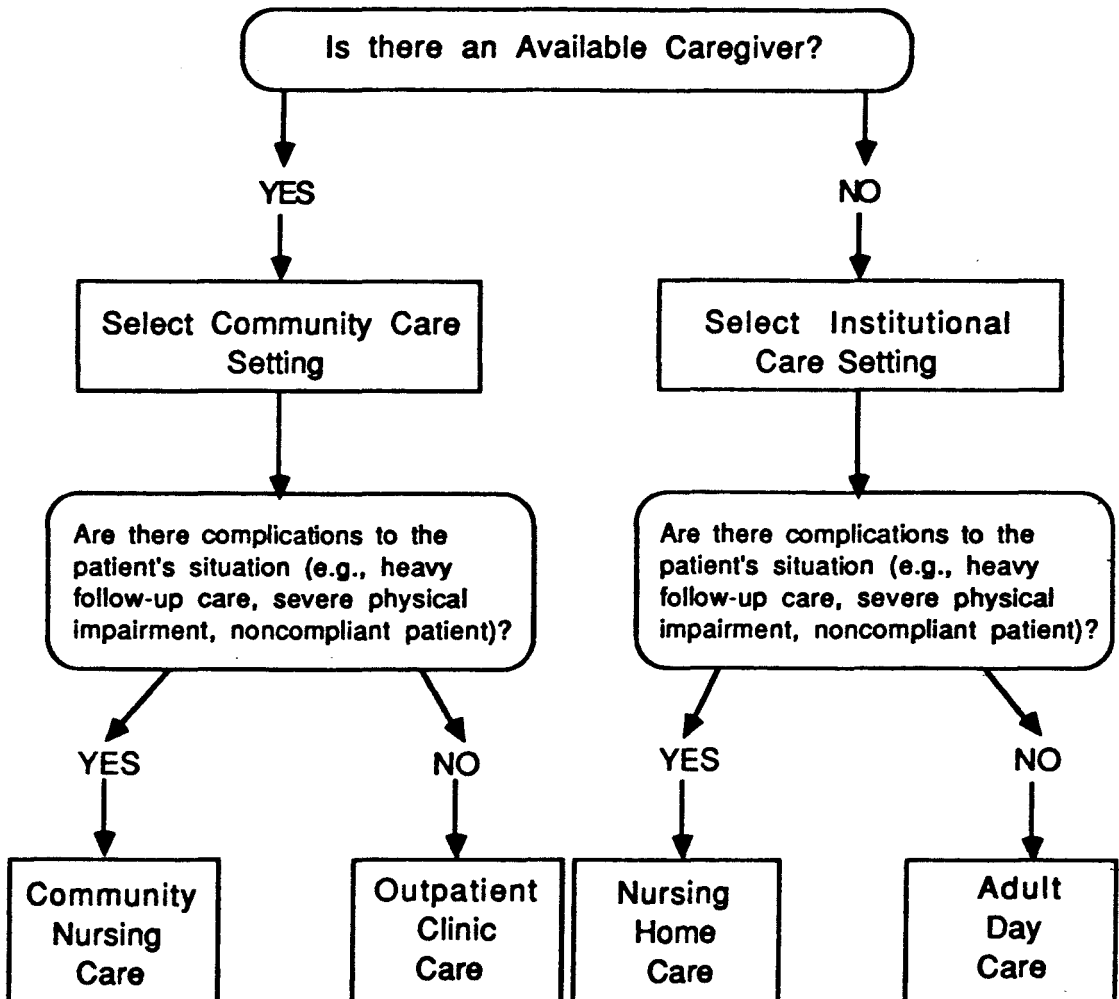
functional impairment, nursing home care was regarded as a more appropriate discharge plan.

The complexity of the patient's situation also influenced which community care program was considered more appropriate. Respondents rated outpatient clinic care higher when the caregiver was available and the patient did not require a great deal of follow-up care. However, when there were complications, i.e., the patient was severely impaired in functioning and/or was noncompliant, community nursing care was considered the better discharge option. An individual who is impaired in functioning most likely also has difficulty traveling to and from clinics. In fact, the patient may miss clinic appointments because of this obstacle. Provision of a visiting nurse would assure that the patient would receive necessary follow-up care without the inconvenience of traveling. In sum, it appears that respondents' processing of information for discharge planning appears to be a two-step process. Since the order in which information was processed was not assessed in this study, an order was imposed on the findings based on the strengths of each patient characteristic.

#### A Discharge Planning Model

Figure 1 displays this two-step decision strategy for discharge planning based on the present findings. In the first step, the caregiver situation is evaluated. The

**Figure 1**  
**Schematic Representation Of**  
**Medical Professionals' Discharge Planning Strategy**



availability of a caregiver orients respondents' choices toward community-based types of care, whereas the unavailability of a caregiver shifts respondents' orientation toward institutional-based types of care.

Step 2 in the decision making process involves the evaluation of additional patient characteristics, i.e., degree of physical impairment, amount of follow-up care and patient noncompliance. This introduces additional complications. A noncompliant patient, a patient who requires a great deal of follow-up care or a patient who is severely impaired in physical functioning, makes the focus of the decision strategy more specific. When the patient has a caregiver available, on the one hand, the presence of complications makes community nursing more desirable than an outpatient clinic as a form of community-based care. On the other hand, when the patient has no caregiver, the presence of complications makes a nursing home more desirable than adult day care as a form of institutional-based care. In other words, once a discharge setting (i.e., community vs. institution) is selected based on caregiver availability, the existence of further complications in the patient's medical status causes respondents to select between different options within these discharge settings.

Forcing respondents to select a single discharge



option as opposed to rating each option independently, did not change how information was utilized for discharge decisions. Step 1, the evaluation of caregiver availability, also occurred in final choice strategies. As was the case when multiple decision options were rated independently, community care programs were more frequently selected when the caregiver was available, and institutional care programs were usually chosen when the caregiver was unavailable.

The impact of additional patient characteristics, step 2 of the proposed model, also influenced forced final choices for discharge. More specifically, patient compliance and follow-up care impacted choices. The main effect of patient compliance on final choices was somewhat unexpected. Patient compliance had a strong influence on decisions regarding nursing home placement, but relatively little influence on other modes of discharge. The literature examining determinants of institutionalization has not identified patient compliance with medical treatment as a potential factor for institutionalization. In fact, it is unlikely that compliance has typically been assessed in these studies.

Amount of follow-up care required had a more predictable effect on discharge choice. Heavier medical care follow-up programs, i.e., nursing home and community

nursing care, were selected when the patient required a great deal of follow-up care. This is one of the patient complications utilized in step 2 of the model that allows respondents to select between options within the institutional care and community care settings.

The decision strategy model displayed in Figure 1 is a very simple and tentative representation of discharge planning. This simple model, however, is supported to some extent by research evidence from the literature on long-term care planning. In past research, the existence of a caregiver has had a powerful impact on whether or not an elderly individual is institutionalized (e.g., Branch & Jette, 1982; Townsend, 1965; Wan et al., 1980). The degree of patient physical impairment has also been found to predict the perceived need for home care services (e.g., Fortinsky et al., 1981; Sager, 1980a, 1980b, 1983). This lends support to the validity of the present findings.

#### Limitations of the Study

There are several limitations to the generalizability of the present research findings. First, respondents came from a single institution--a Veterans Administration hospital which serves a predominantly male, elderly, low income population. This is an inadequate representation of the full range of patients requiring discharge planning and, consequently, is an insufficient sample of discharge

planners. Unfortunately, an attempt to obtain a comparative sample of medical professionals from a nearby university teaching hospital was unsuccessful. It is quite possible that the decision strategy identified in the present research will not be applicable to other settings and other medical professionals involved in discharge planning.

Another limitation of this study was the nature of the task. Medical professionals were asked to respond to hypothetical patients with extremely limited demographic and case history information in a paper-and-pencil simulation. This procedure is far removed from the way in which discharge planning is typically done. Furthermore, case scenarios were limited to elderly male patients with similar medical problems and health care needs, hardly a representative sample of the spectrum of patients who require follow-up care. Additional research studies involving actual patients in need of discharge planning and more extensive patient case histories are necessary to test the present model more definitively. This type of cross-validation would not only extend the model's external validity, but would also improve its construct validity by refining our understanding of the higher-order conceptual variables underlying each step of the decision-making process.

Last, this study focused on individual decision making by medical professionals only. The actual process of discharge planning, however, is probably best depicted as a group process also involving other individuals besides medical professionals. In reality, patients and their families often actively join medical professionals in reaching a decision for discharge follow-up care. Acknowledging this fact, some researchers (e.g., Clark et al., 1986) have begun to examine discharge planning from the perspective of the patient, with a focus on developing strategies to encourage patients to become more autonomous in their decisions. Future research should assess the decision strategies of both patients and their families, if it is to study discharge planning realistically as a group decision process involving medical professionals, patients and their families.

#### Implications and Future Directions

Despite the limitations outlined above, the simulated cases developed for this study provided a good first step to studying discharge planning. The cases contained the four pieces of information medical professionals considered most important for making discharge decisions, and respondents were found to use this information largely as expected when making decisions. The literature has consistently identified caregiver availability (e.g.,

Greenberg & Ginn, 1979; McAuley & Prohaska, 1981; Townsend, 1965) and degree of physical impairment (e.g., Fortinsky et al., 1981; Sager, 1983) as key factors for placement decisions. The effect of patient compliance on nursing home placement was an unexpected although intuitively reasonable finding, not typically reported in the literature. Future studies in the area of discharge planning should include an assessment of patient compliance.

Although the case scenarios were concise, provision of additional case information probably would not have altered respondents' decision strategies. The literature on decision making in general suggests that decision makers are only able to process a limited amount of information when making decisions. This is the concept of limited rationality (Newell & Simon, 1972). Decision makers tend to be selective in their use of available data and have difficulty combining this information in an optimal manner. Therefore, their decision strategies remain simple using the most relevant data available.

This research has identified a preliminary simple model of decision making in discharge planning. A logical next step is to determine whether or not this model is a valid representation of the actual process of discharge planning. One way to test the model's validity is to

formalize the discharge planning process by using a structured data collection form for discharge planners. Information could be gathered about the patient's physical functioning and follow-up health care needs, the availability of a caregiver and the degree of patient compliance, as well as any other factors that the discharge planner considers important before actual discharge decisions are made.

Figure 2 displays an example of a form that could potentially be used to collect these discharge planning data. The data gathered from this form could be compared prospectively with the actual discharge decisions subsequently made to determine how well the previously identified model holds in real discharge planning situations. If this model is a reasonable representation, then development of a data collection form would not only allow discharge planners to collect the most pertinent data, but it would also simplify and perhaps streamline the discharge planning process. This increased efficiency is especially relevant now that patients are experiencing shorter lengths of stay due to the implementation of Diagnostic-Related Groups (DRGs; see, for example, Rosko & Broyles, 1987). DRGs are based on patient diagnoses and are used to dictate the normative length of stay for reimbursement purposes.

**Figure 2**  
**Proposed Discharge Planning Data Form**

Patient Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

SSN: \_\_\_\_\_ Ward: \_\_\_\_\_

Address: \_\_\_\_\_ Diagnosis: \_\_\_\_\_

**A. Caregiver Information:**

Caregiver Name: \_\_\_\_\_ Relationship: \_\_\_\_\_

Caregiver Address: \_\_\_\_\_

**2. Caregiver Availability Status: (check one)**

- |  |  |
|--|--|
| <input type="checkbox"/> a. Works full-time days   | <input type="checkbox"/> b. Works part-time days   |
| <input type="checkbox"/> c. Works full-time nights | <input type="checkbox"/> d. Works part-time nights |
| <input type="checkbox"/> e. Does not work          |  |

**3. Caregiver Health Status (check one)**

- |  |   |
|--|---|
| <input type="checkbox"/> a. No medical problems  | <input type="checkbox"/> c. Severe medical problems |
| <input type="checkbox"/> b. Few medical problems |   |

**B. Patient Information:**

**1. Physical Functioning. Patient is Impaired in (check all that apply)**

- |   |  |
|---|--|
| <input type="checkbox"/> a. Bathing               | <input type="checkbox"/> d. Urinary continence |
| <input type="checkbox"/> b. Dressing              | <input type="checkbox"/> e. Bowel continence   |
| <input type="checkbox"/> c. Mobility/Transferring | <input type="checkbox"/> f. Eating/Feeding     |

**(USING PHYSICIAN OR NURSE ASSESSMENTS)**

**2. Follow-up Care Required: (check all that apply)**

- |  |
|--|
| <input type="checkbox"/> a. Monitoring vital signs     |
| <input type="checkbox"/> b. Monitoring medications     |
| <input type="checkbox"/> c. Physical therapy           |
| <input type="checkbox"/> d. Dressing changes           |
| <input type="checkbox"/> e. Catheter (continence) care |
| <input type="checkbox"/> f. Other (specify: _____ )    |

**3. Patient Compliance with Medical Treatment:**

- |  |
|--|
| <input type="checkbox"/> a. Very compliant     |
| <input type="checkbox"/> b. Somewhat compliant |
| <input type="checkbox"/> c. Noncompliant       |

**C. Any other information relevant to discharge planning ? \_\_\_\_\_**

\_\_\_\_\_

Although the present model may well describe the basic steps underlying the discharge planning process, such a descriptive representation of decision making does not necessarily mean that the discharge decisions made are appropriate. Outcome measures of the success of discharge planning decisions, such as delayed rehospitalization or patient satisfaction with care, are needed to determine whether the decisions made actually result in positive outcomes. These outcome measures would also help to identify other potential means for improving the efficiency and effectiveness of the discharge planning process.

More descriptive methods of studying decision making could also be undertaken to further explore discharge planning. For example, process tracing studies in which medical professionals verbalize their thoughts while processing information or in which professionals are presented with categories of information and then allowed to select what information they require to make decisions would provide a more detailed understanding of discharge planning. The present task was tailored to provide a limited amount of case information, on the basis of which respondents rated and selected discharge options. Allowing respondents to choose the information they considered relevant and examining the order in which this information is processed would provide a rich addition to the present



findings.

As mentioned previously, patients' and families' involvement in discharge planning should also be studied. Do they rely on the same information as medical professionals when considering discharge planning? Are their decision strategies different from physicians, nurses and social workers?

Furthermore, there are several individual difference variables that could potentially influence decision making in discharge planning for both medical professionals and the patients and families involved. These individual differences include social comparison and social desirability, equity, ego-involvement, actor-observer differences and reactance (most likely with patients who are limited in their choice of discharge options due to severe impairments or medical complications). These variables have not been examined in reference to discharge planning and warrant attention in future research.

The results of the present research coupled with the future results of the proposed studies should provide us with enough information to streamline the discharge planning process. This is especially important since the rapidly increasing elderly population virtually assures that long-term health care planning will continue for a long time. Understanding the process now will facilitate

planning in the future.

## SUMMARY

A repeated-measures design was used to examine decision strategies of physicians, medical residents, nurses and social workers for discharge planning. Respondents were presented with hypothetical case scenarios in which information about patient physical functioning, caregiver availability, amount of follow-up care required and patient compliance were manipulated. Professional affiliation had little impact on decisions. The availability of a caregiver had the most influence on discharge decisions. Institutional care settings were considered more appropriate when the caregiver was not available, whereas community care programs were regarded as more appropriate when the caregiver was available.

Respondents' decision making strategies were depicted by a simple two-step model. In the first step, respondents use caregiver availability information to choose between a community care setting versus an institutional care setting. Additional patient complexities, e.g., severe physical impairment, cause respondents to select among options within each setting. For example, nursing home care was rated higher than adult day care when the patient lacked a caregiver and experienced additional follow-up care needs. This research provides a first step towards

understanding decision making in discharge planning.

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**APPENDIX A**

Appendix A

Discharge Planning Survey

Edward Hines, Jr.  
Hospital

Hines B. 60141



In Reply Refer To: 151 B

July 8, 1986

Dear Colleague:

We are all concerned with the needs of our aging population. One area that has become increasingly important is that of post acute care planning. Options have grown rapidly yet we know relatively little about how decisions are made among the various post-hospital options.

In order to provide the most effective care we need to know much more about the process of making discharge plans. My research assistant, Fran Weaver, a doctoral student at Loyola University, is attempting to study these issues through the results of a survey examining medical professionals' decision strategies. This survey is attached. I strongly urge you to complete this survey. The results of this study may help us to improve our discharge planning and enhance the quality of our patients' physical and mental health.

Thank you for your cooperation.

Sincerely,

  
Joan E. Cummings, M.D.  
Chief, Intermediate Care Service

Edward Hines, Jr.  
Hospital

Hines B. (D14)



In Reply Refer To: 151 B

Dear Participant:

Attached you will find a questionnaire dealing with discharge planning. This questionnaire is the basis of my doctoral work examining decision making in discharge planning for patients who may require follow-up services. I am currently a doctoral candidate at Loyola University and a research associate at Hines V.A.

You will be asked to respond to a series of brief case vignettes regarding possible discharge follow-up plans. Some basic demographic information will also be asked. This research has been approved by the chiefs of medicine, surgery, neurology, social work, nursing research, and the chief of staff. **PARTICIPATION IN THIS STUDY IS VOLUNTARY AND, UNDER NO CIRCUMSTANCES, IS TO TAKE PRECEDENCE OVER PATIENT CARE.**

You will notice a number in the lower right corner of this booklet. This number corresponds to your name and is to be used by me strictly to identify nonrespondents so that they may be recontacted. Your responses will be kept completely confidential and the code list will be destroyed as soon as the data has been collected. If you have any questions, please feel free to call me at 343-7200, ext 2414. The results of the questionnaire will be made available to anyone who wishes a copy. Your participation is greatly appreciated.

Sincerely,

A handwritten signature in cursive script that reads 'Fran Weaver'.

Fran Weaver  
Research Associate  
Health Services Research

**INSTRUCTIONS**

Attached are 16 brief case studies of hypothetical patients modeled after actual patients. Each patient has been hospitalized for some medical reason and is now nearing the time of discharge. Please read each case carefully, and then respond to the questions regarding discharge planning for the patient following each description. Treat each case individually; try not to think of the prior cases you have read and judged. Please do not consult colleagues regarding this survey. The last three pages consist of demographic questions and a rating scale of various discharge options. Please, answer these final questions after completing the 16 cases. The entire survey should not take more than 30 minutes to complete.

Please complete this questionnaire as soon as possible and return it to me using the envelope provided. Please make sure that you complete all of the cases before returning the booklet (an incomplete questionnaire is unusable for analysis in this research). Attached to the front of the survey is an interoffice mail slip. Just drop your completed survey in the Loyola interoffice mail, and it will be returned to me at Nines Hospital. If you wish to respond through the mail, my address is:

Fran Weaver  
Health Services Research (151H)  
Nines V.A. Hospital  
Nines, Il. 60141



Mr. Davis, a 60 year old diabetic who is insulin dependent, was recently admitted for uncontrolled diabetes. He has a history of chronic heart failure and HTN. Two years ago, the patient had a left CVA leaving residual right-sided weakness. He needs assistance with bathing and dressing.

The patient and his wife have an apartment in the Chicago area. Mrs. Davis does not work and is in good health. Their income is in the \$10,000 to \$15,000 range. The Davis' family live out of the area.

Medically, the patient is nearing discharge. Follow-up care that may be required includes:

- 1) monitoring of medications
- 2) monitoring of symptoms, diet, compliance, and vital signs

Mr. Davis understands his medical condition and is very compliant with his treatments. He began receiving Medicare benefits after his stroke.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate		Somewhat Appropriate			Very Appropriate	
	1	2	3	4	5	6	7
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Carter is a 65 year old man suffering from a left-sided stroke. The stroke has resulted in some right-sided weakness. The patient has a history of diabetes and has an open sore on his right foot. His medical history includes chronic hypertension and coronary artery disease. He has occasional urinary incontinence and wears an external catheter. He needs assistance with bathing and dressing.

The patient and his wife live in an apartment in the Chicago area. She has recently retired from teaching grade school and enjoys good health. Their yearly income ranges between \$10,000 and \$15,000 a year. They have no family in the area.

Mr. Carter is ready to be discharged from the hospital. Some follow-up care may be required:

- 1) monitoring of blood sugar, vital signs, diet, and related symptoms
- 2) dressing/wound care
- 3) supervision of medications
- 4) physical therapy
- 5) external catheter care

The patient is very compliant with his therapy and medical treatment. He recently became eligible for Medicare.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

(please print)

Mr. Kelly is a 62 year old man suffering from severe heart disease requiring bypass surgery. The surgery was done shortly after he was admitted. He also has hypertension and diabetes. A year ago, he had a stroke leaving him with left-sided weakness. Due to recent urinary incontinence, he has an indwelling catheter. The patient requires assistance with bathing, dressing, transferring, and care of his catheter.

The patient and his wife live in an apartment in the Chicago area. Mrs. Kelly does not work and is in good health. The Kelly's income falls in the \$10,000-\$15,000 range. None of their family lives in the area.

Medically, the patient is stable and ready for discharge. Some follow-up care may be required including:

- 1) supervision of medications
- 2) monitoring of symptoms, edema, blood pressure, diet, etc.

Mr. Kelly is receiving Medicare benefits due to his disability. He has been compliant with his low-sodium diet and takes his medications regularly.

Using the above information please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Fischer is a 64 year old man admitted for control of hypertension. Three months ago, he had a left-sided stroke leaving him paralyzed on his right side. An indwelling catheter was required due to urinary incontinence. He also has an open sore on his right foot. The patient has a history of diabetes and heart disease. He requires assistance with bathing, dressing, transferring, and care of the catheter.

The patient and his wife live in an apartment in the Chicago area. Mrs. Fischer quit working after her husband had heart surgery. She is healthy. Their income per year is between \$10,000 and \$15,000. The Fischers have no family nearby.

At the time of discharge, Mr. Fischer may require medical follow-up in the following areas:

- 1) care of the indwelling catheter
- 2) physical therapy
- 3) medical monitoring of blood pressure, diet, compliance, and related symptoms
- 4) supervision of medications
- 5) wound/dressing care

Mr. Fischer has been compliant with his medical regime. The patient has been receiving Medicare benefits since his bypass surgery.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Thomas has a history of diabetes, resulting in the recent amputation of his right foot. This 64 year old man also has hypertension, coronary artery disease, and a recent mild stroke. He experiences urinary incontinence and uses an external catheter. The patient needs assistance with dressing, transferring, bathing and the catheter.

The patient and his wife have been living in the Chicago area in an apartment. Mrs. Thomas works fulltime as a telephone operator weekdays from 8:00 am to 4:30 pm. She also has experienced some medical problems, including a bad back which require her to limit her activities. Their income is approximately \$10,000 to \$15,000 a year. The couple's family live outside the area.

- At discharge, the patient may require some follow-up care such as:
- 1) monitoring of blood pressure, diet, compliance, symptoms of his disease, etc.
  - 2) supervision of medications

Mr. Thomas has not been very compliant with his treatment. He often fails to take his medications and does not follow his diet. The medical progress was delayed as a result. He does have Medicare insurance.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate		Somewhat Appropriate			Very Appropriate	
	1	2	3	4	5	6	7
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you had to select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Sullivan is a 63 year old man admitted for a mild stroke resulting in slight left-sided weakness. He has a history of diabetes, uncontrolled hypertension, and heart disease. Due to his left-sided weakness, Mr. Sullivan requires assistance with bathing and dressing.

The patient lives in the Chicago area with his wife. They live in an apartment. She is employed as a waitress and works Monday thru Friday from 6:30 am to 3:30 pm. She has some medical problems; sometimes her arthritis is severe. Their yearly income is about \$10,000 to \$15,000. The Sullivans have no family in the area.

The medical plan is to discharge the patient as soon as possible since his medical condition is stable. The following follow-up care may be required:

- 1) monitoring of blood pressure, diet, blood sugar, and other symptoms
- 2) medications supervision

Despite his deteriorating condition, Mr. Sullivan has been very compliant and tries to do as much as he can within his limitations. He has been receiving Medicare benefits.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

(please print)

Mr. Edwards is 60 years old with a history of coronary artery disease. He is recovering from heart bypass surgery. His medical history includes a history of HTN, a mild stroke, and diabetes with a left middle toe amputation. The patient's relative immobility has caused him to develop a small decubitus on his left flank. Mr. Edwards has poor bladder retention, so he wears an external catheter that he cares for himself. He requires assistance with bathing and dressing.

The patient's wife does not work and is in relatively good health. The couple live in an apartment in the Chicago area. Their income is between 10 and 15 thousand dollars a year. All of their family live outside the area.

At discharge, the patient may require follow-up in the following areas:

- 1) dressing/wound care
- 2) physical therapy
- 3) monitoring of blood pressure, diet, compliance, and other symptoms
- 4) supervisions of medications
- 5) care of the catheter

Mr. Edwards has not been very compliant with his therapy and medications. He oftens fails to exercise his weakened limbs and skips his medicine some days. He receives Medicare benefits.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

\_\_\_\_\_  
(please print)

Mr. Lawrence is a 63 year old male most recently admitted for severe hypertension. A year ago he suffered a stroke leaving him with some paralysis in his right leg. He has a history of diabetes and coronary artery disease. Also, he has an infected toe due to an ingrown toenail that requires some care. During the night, the patient experiences urinary incontinence, so he wears a catheter that he cares for himself. He requires assistance with bathing and dressing.

Mr. Lawrence and his wife live in an apartment in the Chicago area. The patient's wife works 40 hours a week as a salesclerk, 9 to 5, Monday through Friday. She has had some health problems herself including asthma and hypertension. The couple's income falls in the \$10,000 to \$15,000 range. No other family members live in the area.

The doctors are ready to discharge Mr. Lawrence. He may require some follow-up, including:

- 1) supervision of medications
- 2) dressing/wound care
- 3) monitoring of blood pressure, edema, diet, compliance, and other symptoms
- 4) physical therapy
- 5) catheter care

The patient has been receiving Medicare since he suffered his stroke. He does his best to comply with his medical treatment plan.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate		Somewhat Appropriate			Very Appropriate	
	1	2	3	4	5	6	7
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)



Mr. Warner is a 64 year old man admitted for uncontrolled hypertension. Two years ago a stroke left residual left-sided weakness. The patient has developed a sore on his foot that is of concern because of his diabetes. He also has coronary artery disease. The patient has an external catheter due to nighttime urinary incontinence. He requires help with dressing and bathing.

The patient and his wife live in an apartment building in the Chicago area. His wife works 40 hours a week as a cashier from 7:00 am to 4:00 pm weekdays. She has chronic arthritis, limiting her abilities. Financially, the couple have an income between \$10,000 and \$15,000. The couple's family do not live in the Chicago area.

At discharge, the patient may require some follow-up care including:

- 1) dressing/wound care
- 2) care of the catheter
- 3) monitoring of diet, symptoms, compliance, vitals signs, etc.
- 4) physical therapy
- 5) supervision of medications

Mr. Warner is noncompliant with his treatment. He appears unwilling to follow the prescribed treatment regimes. The patient does qualify for Medicare benefits.

Using the above information, please 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate		Somewhat Appropriate			Very Appropriate	
	1	2	3	4	5	6	7
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Barton is a 65 year old man suffering from severe heart disease which resulted in triple bypass surgery during this admission. Complicating his medical history is the fact that the patient had a stroke a year ago related to his chronic hypertension. He also had a left foot amputation from complications of his diabetes. The patient wears an external catheter because of urinary incontinence. He requires assistance with bathing, dressing, transferring and care of his catheter.

The Bartons live in an apartment in the Chicago area. Mrs. Barton has a full time job as a cook in a high school cafeteria. Her hours are 7:30 to 4:00 school days. She suffers from chronic arthritis. Their income is between \$10,000 and \$15,000. The couple has no family in the area.

Upon discharge, the patient may require some follow-up in the areas of:

- 1) supervision of medications
- 2) monitoring of vital signs, symptoms of his disease, diet, etc.

Throughout his entire medical ordeal, Mr. Barton has remained compliant with his treatment. He has Medicare insurance.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Green, age 64, was admitted with a left CVA. The stroke has left him with some paralysis of his right extremities. His history includes HTN, diabetes and coronary artery disease. Two toes on his left foot were amputated two years ago. He needs assistance with bathing, dressing, transferring and external catheter care, a result of his urinary incontinence.

The Greens live in a Chicago area apartment. Mrs. Green has not worked for many years. She is in good health, enjoying outdoor activities like gardening. Their income is in the 10 to 15 thousand dollar range. The Greens' relatives all live out of the area.

At discharge, the patient may require follow-up, including:

- 1) monitoring of vital signs, blood sugar, compliance, and related symptoms
- 2) supervision of medications

Mr. Green is not compliant with his treatment. He often refuses to take his medications resulting in poor control of his diabetes and hypertension. The patient has Medicare benefits.

Using the above information, please: 1) rate the appropriateness of of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Oupatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Johnson is a 64 year old male recently admitted for hypertension. Three months ago he had a left CVA with persistent right-sided weakness. The patient has a history of diabetes, HTN, and heart disease. During his hospital stay, he developed a small decubitus on his flank. The patient requires assistance with bathing, dressing, and transferring. He also has an indwelling catheter due to urinary incontinence; he needs assistance with the care of the catheter.

The patient and his wife live in a four room apartment on the south side of Chicago. Mrs. Johnson works as a telephone operator Monday through Friday 9 am to 5 pm. She has a history of arthritis. Their income falls in the \$10-\$15 thousand range. The couple's family does not live in the area.

At discharge, the patient may require some kinds of medical follow-up care such as:

- 1) dressing/wound care
- 2) physical therapy
- 3) medical monitoring of blood pressure, diet, compliance, and related symptoms
- 4) supervision of medications
- 5) catheter care

Mr. Johnson has been compliant with his treatment regime. He does his exercises and takes his medications. He is eligible for Medicare benefits.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

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(please print)

Mr. Parker is a 63 year old male admitted to the hospital with complications due to diabetes. These complications resulted in the amputation of his left leg below the knee. The wound has not been healing well. A few years ago, the patient suffered a slight stroke. His medical history includes coronary artery disease and HTN. The patient is incontinent of urine requiring an indwelling catheter. He requires assistance with bathing, dressing, transferring, and his catheter.

The patient and his wife live in an apartment in the Chicago area. Mrs. Parker quit her job two years ago, after her husband had the stroke. She is in good health. Their yearly income is around \$10,000 to \$15,000. The Parkers' have no family in the area.

Some follow-up care will be required. This includes:

- 1) medical monitoring of symptoms, diet, compliance, blood pressure, etc.
- 2) dressing/wound care
- 3) physical therapy
- 4) care of the indwelling catheter
- 5) supervision of medications

Mr. Parker is not always compliant with his medications, diet and therapy making his medical situation more complex. He has Medicare benefits.

Using the above information, please: 1) rate the appropriateness of each of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate	
(A) Nursing Home	1	2	3	4	5	6	7	
(B) Community Nursing Care	1	2	3	4	5	6	7	
(C) Outpatient Clinics	1	2	3	4	5	6	7	
(D) Adult Day Care	1	2	3	4	5	6	7	
(E) No Further Care	1	2	3	4	5	6	7	

2) If you could select only one type of follow-up care for this patient, what would you choose?

(please print)

Mr. Nelson is a 61 year old man with heart disease. He was admitted for triple bypass surgery. The patient previously had a stroke with minor paralysis and slight aphasia. He has a history of adult onset diabetes and hypertension. Mr. Nelson requires assistance with bathing and dressing.

The patient and his wife live in an apartment in the Chicago area.. Mrs. Nelson is employed full-time as a librarian working Mondays thru Fridays from 8:30 to 5:00. She suffers from minor chronic illnesses (i.e., asthma and diabetes). Their income falls in the \$10,000-\$15,000 range. The Nelsons have no family in the area.

At discharge, the patient will require some follow-up:

- 1) supervision of medications
- 2) monitoring of blood pressure, diet, compliance, and symptoms related to his illnesses

Mr. Nelson has consistently been noncompliant with his diet and medications. It is suspected that this contributed to his earlier stroke. He is receiving Medicare benefits.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)

Mr. Adams is a 60 year old man with multiple medical problems including coronary artery disease, insulin dependent diabetes, and hypertension. Most recently he was admitted with a left CVA with some paralysis of the right side and slight aphasia. He has developed a small decubitus on his lower sacral area. He needs assistance with bathing, dressing and transferring. The patient has a foley catheter due to urinary incontinence that he also needs assistance with.

The patient and his wife reside in an apartment in Chicago. Mrs. Adams works 5 days a week 8 am to 5 pm as a typist. She has had some medical problems recently including diabetes which limits her abilities. Their average yearly income is between \$10,000 and \$15,000. Their family does not live in the area.

Mr. Adams may require the following medical care at discharge:

- 1) catheter care
- 2) wound/dressing care
- 3) physical therapy
- 4) medical monitoring of diet, compliance, blood pressure, symptoms, etc.
- 5) supervision of medications

Mr. Adams is noncompliant with his diet, medications, and therapy. He receives Medicare benefits due to his disabilities.

Using the above information, please: 1) rate the appropriateness of each of the discharge options listed below: (circle one response to each)

	Not at all Appropriate		Somewhat Appropriate			Very Appropriate	
	1	2	3	4	5	6	7
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

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(please print)

Mr. Robinson is a 62 year old male recently admitted for uncontrolled diabetes. The patient has a history of HTN and coronary artery disease. A year ago, he suffered a mild CVA. The patient requires assistance with bathing and dressing.

The patient's wife retired from her job several years ago and is in good health. The couple lives in an apartment in the Chicago area. Their income averages between \$10,000 and \$15,000 a year. Their family does not live in the area.

- At discharge, the patient may require some follow-up care such as:
- 1) medical monitoring of blood pressure and sugar, related symptoms, diet, etc.
  - 2) supervision with medications

Although the patient's hospital stay has been uneventful, he has consistently been noncompliant with the medical treatment. He violates restrictions on his diet, and fails to take required medications. He receives Medicare benefits due to his heart condition.

Using the above information, please: 1) rate the appropriateness of the discharge options listed below: (circle one response to each)

	Not at all Appropriate			Somewhat Appropriate			Very Appropriate
(A) Nursing Home	1	2	3	4	5	6	7
(B) Community Nursing Care	1	2	3	4	5	6	7
(C) Outpatient Clinics	1	2	3	4	5	6	7
(D) Adult Day Care	1	2	3	4	5	6	7
(E) No Further Care	1	2	3	4	5	6	7

2) If you could select only one type of follow-up care for this patient, what would you choose?

---

(please print)



(A) Please indicate on the rating scales below how familiar you are with each of the following long-term health care alternatives (Please circle one response to each).

	Less Familiar			More Familiar			
1. Nursing Home	1	2	3	4	5	6	7
2. Adult Day Care	1	2	3	4	5	6	7
3. Community Home Nursing Care	1	2	3	4	5	6	7
4. Lifeline (Buzzer check-in system)	1	2	3	4	5	6	7
5. Hospice	1	2	3	4	5	6	7
6. Outpatient Clinics	1	2	3	4	5	6	7
7. Residential Care	1	2	3	4	5	6	7
8. Respite Care	1	2	3	4	5	6	7

(B) How often are you directly involved in making follow-up care plans for patients requiring care after discharge?

1	2	3	4	5	6	7
Rarely if Ever						Almost Always

(C) Please complete the following items:

1. Please put a check next to your profession:
  - a. Physician (attending or staff)
  - b. Medical Resident
  - c. Social Worker
  - d. Nurse
2. Write in the highest degree you have obtained. \_\_\_\_\_
3. Write in the number of years of experience you have had in your above mentioned profession. \_\_\_\_\_ yrs.
4. What is your institutional affiliation (please check):
  - a. Loyola University Medical Center
  - b. Hines V.A. Hospital
  - c. Both Loyola and Hines
  - d. Other (Please specify: \_\_\_\_\_)

IF YOU ARE UNCOMFORTABLE ANSWERING ANY OF THE REMAINING QUESTIONS, PLEASE FEEL FREE TO SKIP THAT PARTICULAR QUESTION AND GO ON TO THE NEXT ONE.

5. What is your yearly personal income (prior to taxes)?
  - a. less than \$20,000
  - b. between \$20,000 and \$29,999
  - c. between \$30,000 and \$39,999
  - d. between \$40,000 and \$49,999
  - e. between \$50,000 and \$59,999
  - f. between \$60,000 and \$69,999
  - g. between \$70,000 and \$79,999
  - h. between \$80,000 and \$89,999
  - i. between \$90,000 and \$99,999
  - j. \$100,000 and over

6. What is your ethnic group/race?
- a. White
  - b. Black
  - c. Hispanic origin
  - d. Asian/Pacific Islander
  - e. Other
7. What is your religious affiliation?
- a. Protestant
  - b. Catholic
  - c. Jewish
  - d. Other
  - e. None
8. Did you ever serve in the U.S. Armed Services?
- a. Yes
  - b. No
9. What is your current marital status?
- a. Married
  - b. Not Married
10. What is your age?     \_\_\_ yrs.
11. What is your gender?
- a. Male
  - b. Female

Once again, thank you for participating in this research examining long-term care planning. Please return all materials to me through inter-office mail. If you have further questions, give me a call. Fran Weaver Health Services Research (151H) Hines V.A. Hospital Hines, Il. 60141 343-7200 ext. 2414/2413

## APPENDIX B

APPENDIX B

Debriefing Letter

Oct. 26, 1986

Dear Research Participant:

First, I would like to thank you very much for responding to the questionnaire regarding discharge planning. The questionnaire was the basis of my doctoral work, so I am especially grateful.

Second, I would like to provide you with some background regarding this research. The primary purpose of this work was to gain a better understanding of decision making in long-term health care planning. Specifically, there were four aims of this study: (1) to identify the relative importance of the characteristics that health care professionals consider important when making post hospital follow-up care decisions; (2) to determine whether the characteristics used in decision making vary from one medical profession to another; (3) to examine the decision strategies of these professionals for consistencies and inconsistencies within and across the professions; and (4) to assess the generalizability of these findings across institutions. Physicians, registered nurses and social workers were surveyed from Loyola University Medical Center and Hines V.A. Hospital.

The existing research on medical decision making suggests that whereas medical personnel are very competent at identifying what characteristics are important when making a decision; they are inconsistent when combining this information for actual decisions. No one has specifically looked at discharge planning as a decision making situation. Discharge planning is an interesting area of study because many different people may be involved: physicians, nurses, social workers, patients, families, etc. This particular study examines individual decision making by health care professionals. I expect to find some differences across professions in response to the questionnaire; primarily in the strategies used rather than the characteristics used to make decisions. The results should prove interesting for both policy makers and medical professionals on how discharge planning is dealt with on an individual and institutional level.

The next several months will be spent analyzing the data gathered from this research. If you are interested in receiving a copy of the research results, please call me at 343-7200 x2413 or 1414.

Sincerely,  
*Frances M. Weaver*  
Frances M. Weaver, M.A.  
Research Associate

APPROVAL SHEET

The dissertation submitted by Frances M. Weaver has been read and approved by the following committee:

Dr. Fred Bryant, Director  
Associate Professor, Psychology, Loyola

Dr. Emil Posavac  
Professor, Psychology and  
Department Chairman, Psychology, Loyola

Dr. Scott Tindale  
Assistant Professor, Psychology, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

4/15/87

Date

Fred B. Bryant  
Director's Signature