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Organization and change in medical rehabilitation

Frey, William R., Ph.D.
The Ohio State University, 1987

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UMI
ORGANIZATION AND CHANGE IN MEDICAL REHABILITATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of the Ohio State University

By

William R. Frey, B.S.O.T., M.Ed., M.H.A.

The Ohio State University

1987

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To My Wife, Carol
ACKNOWLEDGMENTS

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FIELD OF STUDY

Sociology
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CHAPTER I
RESEARCH PROBLEM AND OBJECTIVES

Research Problem

Medical rehabilitation is assuming an increasingly important place in America's health care enterprise. Due to significant technological advances which have led to a reduction in mortality and due to an aging population, the numbers of disabled persons are growing (Colvez and Blanchat, 1981). 1985 revenues for the medical rehabilitation industry approximate $4.5 billion and may grow to $11 billion by 1990 (Hoover and Balter, 1986).

The cost of treating the disabled is however only a portion of the total economic cost of disability to our society. When one considers the costs of lost production, costs of welfare payments and other forms of compensation and benefits, the magnitude of this economic problem becomes more apparent. If the emotional burden suffered by patients, families and friends is added, the growth in disability in our society becomes a manifold area of concern.

In a paper recently drafted by the National Association of Rehabilitation Facilities, the American Academy of Physical Medicine and Rehabilitation and the American Congress of Rehabilitation Medicine, the
Purpose of medical rehabilitation is defined as "the restoration of people disabled by disease or injury to maximize physical function through a comprehensive, integrated program of medical and social services. The principle types of cases treated by rehabilitation medicine are spinal cord injuries, stroke, head injuries, amputation, soft tissue injuries, arthritis, hip fractures, burns, chronic pain and other neurological conditions" (National Association of Rehabilitation Facilities, 1983:1).

In this statement, attention is focused on disabilities that have risen from medical problems, but in medical rehabilitation the focus is not on curing. Instead, the problem is how to restore a person to normal functioning. In 1965, conceptual distinctions were advanced by Nagi (Albrecht, 1981: 34-36) in describing the domain of medical rehabilitation. Four entities were defined:

...Active pathology "is associated with the mobilization of defenses and coping mechanisms". Two conceptually distinct phenomena are involved. (1) The organism's normal processes are interrupted. (2) The organism is fighting to restore a normal state of existence.

...Impairment "indicates a physiological, anatomical, or mental loss, or a combination of these". Active disease constitutes impairment. However, impairments of concern to rehabilitation organizations may be residual in nature, that is, those limitations that remain after the active stage of pathology has been controlled or eliminated.

...Functional limitations are changes in the body's capacity to function and may be manifested at the molecular, cellular, tissue, organ, region, system or total organism levels. Limitations in functioning at the higher levels of
activities such as walking, reaching, reasoning, hearing, etc., are often called "handicaps" in the literature. Limitations at a lower level (cells, tissues, etc.) may not be reflected in higher level activities. However, limitations in functioning at the higher levels (walking, bending, etc.) will be reflected at the lower level also.

...Disability is "a form of inability or limitation in performing roles and tasks expected of an individual within a social environment. Disability is usually applied to long term patterns of behavior when the disabled individual is unable to perform the tasks and roles involved in life activities. These normal obligations involve "self-care, education, family relations, other interpersonal relations, recreation, economic life and employment and vocational concerns". The degree of disability is influenced by the degree of limitations, the individual's definition of the situation and the definition of the situation by others.

These conceptual distinctions acknowledged that the term disabled does not apply equally among individuals who may, in fact, have the same impairments. Disability is socially defined.

Today, we believe that medical rehabilitation augments the restoration of the disabled, and we support these programs with public and private funds. However, this was not always the situation in the United States. Prior to World War I, society had not recognized the benefits of rehabilitation. Largely an agrarian nation, the populus was only beginning to concern themselves with the problems being created by industrial injuries. By 1920, only eight states had passed legislation which addressed vocational rehabilitation issues (Straus, 1966). It was during the war that the public's attention was focused on the disabled.
The first true period of growth for medical rehabilitation occurred as a result of compassion for the large number of returning maimed soldiers. Conflict arose though as to who would control the rather amorphous set of activities that were evolving and being labeled rehabilitation. Military physicians promoted a unified concept of medically dominated rehabilitation that included treatment, education and vocational training. They even envisioned building "reconstruction" hospitals after the war was over. But, civilian agencies resisted the takeover efforts of military medicine and were particularly adamant in not wanting to relinquish their authority in vocational training and placement programs. In 1918, the secretary of war settled the military-civil dispute by arriving at, "a compromise that drew a sharp distinction between medical and vocational programs. All 'functional and mental restoration' programs were explicitly placed under the control of the surgeon general" (Gritzner and Arluke, 1985:48). Vocational rehabilitation was conceptualized as an extension of education and placed in the Office of Education (Straus, 1966).

Following World War I, public interest in rehabilitation waned. If a general hospital developed a department to specialize in rehabilitation services, the physician in charge was usually an orthopedic surgeon. Often the service was managed by a technician (Gritzner and Arluke, 1985). It took the demands of another world war to move rehabilitation from marginality to legitimacy.
During World War II, changes in the therapeutic approach to convalescing soldiers were advanced. In addition to rest, the disabled were increasingly encouraged to engage in productive activity. A prime advocate of this theory was the internist, Howard Rusk, M.D., who is often credited with beginning the modern day specialty of physical medicine. Rusk and other military advocates were so successful in advocating their ideas about rehabilitation, that by the end of the war, President Roosevelt asked his secretary of war, Henry Stimson, to organize a comprehensive restoration benefit for the disabled. "My dear Mr. Stimson, I'm deeply concerned about our casualties returning from overseas, as I know you are. I would like you to see that no one is discharged from service until he has had the full benefit of hospitalization, which will include not only medical care but resocialization, psychological adjustment and rehabilitation. I would like you to see that this is put in operation as soon as possible" (Rusk, 1972:89).

On the civilian side, the bureaucracy of providing vocational services also was growing. In 1943, the national Office of Vocational Rehabilitation was established. The law creating this agency supported the notion that vocational services should be seen as therapeutic interventions. As such, those working in vocational rehabilitation became more aligned with medicine than they had in the past and less associated with education.

Obermann (1965) notes that vocational rehabilitation had not benefited greatly from being a part of the Office of Education. Educational training was overemphasized and physical restoration and services
especially needed by the disabled were underemphasized. In the Office of Education, federal funds could not be used to purchase medical nor maintenance services even while the disabled were being trained. With the passage of the 1943 Vocational Rehabilitation Act, funds were suddenly available for diagnostic, medical, psychological examination; corrective surgery, medical treatment, hospitalization, travel as well as educational expenses (Straus, 1966).

Following the second world war, the demand for the specialized services associated with rehabilitative medicine, such as physical, occupational and speech therapies, clinical psychology, et al., continued to grow. Rehabilitation was a "worthy activity", an investment which would pay for itself (Berkowitz, 1979:19).

With the 1954 amendments to the Vocational Rehabilitation Act, considerably more funds were made available to expand and strengthen these professional education and training programs. Demand for rehabilitation services grew even more after federal Medicare rules and regulations were issued. However, the demand for and the status of the physician rehabilitation specialty, now called physiatry, remained low within the health care community. Benton (1981) likened the physiatrists situation to the mythical sisyphus who kept pushing the rock up the side of the mountain only to have it come back again and again.

Recently, new regulations governing the financing of federally reimbursed health care have caused the value of rehabilitation medicine and its practitioners to again be reassessed. In 1982, approximately 322.4 billion dollars or 10.5% of the gross national product of the United States
was spent on purchasing health care services (Health Care Financing Administration, 1983). In attempting to control the escalating costs of health care services, Congress passed the Social Security Amendments of 1983 (Public Law 98-21). This law significantly changed the way hospitals are paid. Under the old system, hospitals were paid for the "reasonable costs" incurred in providing care to Medicare patients. Most costs could be passed on to the federal buyer, so little incentive was built into the system of reimbursement for hospitals to become more efficient.

The new law radically changed the older, retrospective, cost-based system to a prospective payment system where payment rates are established before services are rendered. The law provides that each federally financed patient admitted to a hospital is assigned to a diagnosis related group (DRG), and the hospital is paid a preestablished DRG rate for the patient's care regardless of the length of hospital stay or the costs incurred in delivering the care. If a hospital can provide the service at a cost lower than the preestablished rate then it realizes a gain ... a profit. If the hospital overspends the preestablished rate, the hospital suffers a financial loss. In announcing the prospective DRG system, the Secretary of Health and Human Services (HHS) called the changes, "the most important improvement in the history of Medicare" (Wallis, 1983:56). Many would agree with her. In essence, with this new law, the economic power inherent in hospital-based health care services shifted from the providers of care to the payers of care.

Medical rehabilitation hospitals and rehabilitation units of acute care hospitals are excluded from the new prospective payment system.
Various other entities; psychiatric hospitals, distinct psychiatric units of acute care hospitals, children's hospitals, long-term hospitals and other special cases, also remain excluded from the prospective payment plan (Federal Register, 1983). However, PL 98-21 does direct HHS to investigate the feasibility of incorporating all of these into the new financing system.

In regard to medical rehabilitation, the data used in developing the DRG method of payment contained limited data about care provided in medical rehabilitation organizations. Medical rehabilitation is care that begins following the stabilization of acute disease or trauma, but considerable differences exist between the parameters of acute treatment and rehabilitative treatment. In the medical rehabilitation organization, the treatment process is often much more lengthy than the episodic care given in an acute care setting. In 1983, the American Hospital Association (1984) reported that the overall average length of stay for patients in community hospitals was 7.6 days compared to medical rehabilitation hospital patients whose average length of stay was 41 days. Furthermore, the goals of the two organizations are considerably different. As has been mentioned, acute care stresses curing a patient, medical rehabilitation concentrates on improving functional restoration. Due to these differences, the medical rehabilitation industry has continued to argue that research does not show that a diagnosis-based financing system is suitable for patients undergoing rehabilitation. In fact, early results of research indicate that application of the DRG system to medical rehabilitation organizations could result in "inequitable reimbursement
and consequently problems in rendering quality care, particularly to those requiring extensive care" (Granger, et. al., 1986:61).

In December 1985, according to federal exemption criteria, there were 68 medical rehabilitation hospitals and 386 hospital-based inpatient medical rehabilitation units. By October 1986, the number of such organizations had increased to 75 medical rehabilitation hospitals and 458 hospital-based inpatient medical rehabilitation units (National Association of Rehabilitation Facilities, November, 1986). This growth is noteworthy because in 1983, the National Association of Rehabilitation Facilities (NARF) estimated that 51% of patients admitted to inpatient medical rehabilitation organizations were covered by Medicare (National Association of Rehabilitation Facilities, 1984). Thus, the potential growth of federal expenditures for medical rehabilitation is significant. The federal exemption criteria may be found in Appendix A.

With this projected growth, more attention is being focused on organizations which provide inpatient medical rehabilitation; the organizational forms which are evolving to meet this health care need and the effectiveness of the organizations. Stinchcombe (1965) has written that organizational forms and structures are in part determined by the particular period in which they were founded. Therefore, an examination of medical rehabilitation organizations during their period of rapid growth may provide insights which will help in our understanding of this segment of health care delivery.

Health care organizations must assure that their services and programs are benefitting individuals who are admitted for care.
Historically, voluntary accrediting commissions have been the mechanism in our society to provide consumers with objective assurance that organizational resources were sufficiently available and that procedures were in place at local facilities to meet professional standards of care. But critics have argued that assuring that a normative process can occur does not necessarily mean that it will occur, or that the process will bring about the anticipated clinical outcomes.

The quality of care provided by health care organizations and the efficiency of providing that care are frequently discussed issues in literature on all health care organizations. Some writers have concluded that these are in fact ultimate goals and should be the dependent variables to be explained by researchers when examining organizations involved in the delivery of health care services (Shortell, 1976). Quality in medical rehabilitation can be defined as effectively increasing a patient's level of independence.

In measuring the quality of medical rehabilitation, an emphasis on outcome is appropriate. In the rehabilitation model, the role of the patient is predominant and differs dramatically from the role described in Goffman's (1961) total institution where a patient is "stripped" of personal culture. In fact, the Commission on Accreditation of Rehabilitation Facilities (CARF), requires that the patient be systematically included in decisions made about his/her rehabilitation. In rehabilitation facilities, one often hears that the patient is the most important member on the team. Donabedian (1980:118) provides a convincing rationale for this belief, "The client is fundamentally
interested in outcomes; he can understand their significance when they are expressed in functional terms, and he is often the primary source of information concerning them”.

There are non-clinical outcomes of the rehabilitation process which are also important to organizations providing medical rehabilitation. In particular, an assessment of the cost of providing medical rehabilitation is needed. England (1986:7) writes, the values of the medical rehabilitation organization are “rooted in the belief that the individual has inherent worth...and recognizes that even limited improvement is important if it adds some degree of independence”. Thus, the cost of providing medical rehabilitative care to a patient varies considerably depending on the unique characteristics of the individual patient and the rehabilitation problems present. This is perplexing to payers of medical rehabilitative care, but unfortunately, little consensus exists as to the methodology which should be employed in forecasting the cost of providing inpatient medical rehabilitation.

Normally, to measure effectiveness, that is, quality and efficiency, aggregate data is collected by a medical rehabilitation organization and categorized according to locally determined criteria for decision making. For example, an organization may determine that an important objective for their population of patients is improved communication. The staff could establish specific criteria to be measured. One item could be the percentage of patients who develop communication which can be understood by strangers. This item would be assessed for all patients included in the study. If the percentage of patients meeting the objective
was not at the level expected by the staff, then reassessment of the rehabilitation process may be appropriate and changes in resource allocations may be needed. Due to the wide assortment of assessment methods and scales in use throughout the industry, comparative analysis of data representing medical rehabilitation organizations has been extremely difficult.

Studies of health care organizations have noted that the time associated with gathering valid and relevant data is often cost prohibitive. Furthermore, the inaccessibility of medical records and other performance documents is also often cited as a major problem in conducting research. As a result, relatively few comparative studies among health care organizations have been published and a paucity exists in regard to medical rehabilitation organizations.

Due to my employment in a multiple hospital system, I have been in a unique position to gather data which can partially explain the dynamics of change now occurring in medical rehabilitation. As the previous paragraphs indicate, these changes have significant economic, social, political and moral implications. In this dissertation, I will interpret current external and internal forces affecting medical rehabilitation by observing the organizations of medical rehabilitation and measuring the effectiveness of these organizations.
Study Objectives

The objective of this research is to explore changes in the organization of inpatient medical rehabilitation resulting from shifts in reimbursement policies by the federal government and other environmental factors. More specifically, the purposes of the study can be summarized as follows:

1. To assess the relationships of ownership of facilities, whether for-profit or nonprofit organizations, to indicators of quality and efficiency of the care provided.

2. To assess the relationships of certain attributes of organizations of inpatient medical rehabilitation, namely size, maturity, sources of payment, and location on the quality and efficiency of services they provide.

3. To describe and explain the influence of change in the organization of inpatient medical rehabilitation on interprofessional relations.
CHAPTER II

METHODOLOGICAL APPROACH

Research Design

This dissertation is a study of an investor-owned, for-profit medical rehabilitation hospital corporation. This multiple-hospital corporation has grown since its incorporation in 1979 from one facility to over twenty facilities. During the study, the corporation consisted of twenty-two organizations employing approximately 3400 persons. The corporation includes a mixture of new organizations as well as older, more mature organizations which were acquired during the corporation's rapid expansion. Some of them are designed to be independent, free-standing hospitals and are located outside of general acute care hospital campuses. Others were built as dedicated units to be managed within a general acute care hospital. The organizations vary in size and are located in ten states within the continental United States. The larger concentrations of the organizations are in Pennsylvania, Florida and California. The corporate office is located in Pennsylvania and has a managerial and clerical staff of approximately 50 persons. As an employee of the central corporate office, I had access to hospital managers, clinicians, documents and other resources, and was authorized to implement one common data collection
instrument throughout the corporation. Some of these data are used in this research.

Research conducted to explain the impact of organizational variables on the outcome of medical rehabilitation has for the most part failed to yield meaningful information. For example, recent quantitative research sponsored by the National Association of Rehabilitation Facilities (NARF) (1984) failed to establish causal links among outcome measures such as average length of patient stay and charges per discharge with independent variables such as ownership, size, or other descriptors of medical rehabilitation facilities. According to analysts, results of these surveys did not reveal significant explanatory information about the industry. Rather than using survey methodology, this dissertation represents an in depth study which will yield more qualitative information about this emerging part of the health care delivery system.

Data Collection

This study is based on direct observations, informal interviews with key informants such as local medical records administrators and clinical department directors, and on information gathered during personally conducted training sessions. Training sessions were held at eighteen local hospitals. In addition, three other hospitals sent representatives to these training sessions. In total, training was provided to and data were collected from twenty-one organizations. The only hospital of the corporation which chose not to participate in the study was a facility which specialized in head injured patients. This
specialty hospital was in the process of developing its own assessment instrument which local clinicians believed would be particularly sensitive to their unique population of patients.

In addition, from January through March 1987, quantitative data pertaining to the twenty-one hospitals were collected on uniform coding sheets for hospitalized patients admitted to the twenty-one organizations. This coding sheet may be found in Appendix B. Recording information was completed according to guidelines prepared by the Task Force for Development of a Uniform Data System for Medical Rehabilitation. The guidelines may be found in Appendix C. The Task Force's Uniform Data Set (UDS) includes a functional assessment component called the Functional Independence Measure (FIM). When clinicians use the FIM, patients are assessed as to what activities they actually perform, not what they ought to do or have the potential to do. This functional assessment does not measure all possible activities. It is instead, a minimal selection of observable activities. A summary list of FIM items includes:

"Feeding"-Includes all aspects of eating and drinking, such as opening containers, pouring liquids, cutting meat, buttering bread, chewing, and swallowing.

"Grooming"-Includes oral care, hair grooming, washing hands and face, shaving and applying make-up.

"Bathing"-Includes bathing the entire body from the neck down (tub, shower, or bed bath).

"Dressing: Upper Body"-Includes dressing above the waist as well as donning and removing prosthesis or orthosis when applicable.

"Dressing: Lower Body"-Includes dressing from the waist down as well as donning or removing prosthesis or orthosis when applicable.
**Tolleting**—includes maintaining perineal hygiene and adjusting clothing after toileting.

**Bladder Control**—includes complete intentional control of urinary bladder and management of equipment necessary for emptying bladder.

**Bowel Management**—includes complete intentional control of bowel movement and use of laxatives, suppositories and manual evacuation.

**Transfers: Bed, Chair, Wheelchair**—includes management of all aspects of transferring to and from bed, chair, or wheelchair, or coming to a standing position, if walking is the typical mode of locomotion.

**Transfer: Toilet**—includes getting on and off toilet.

**Transfers: Tub or Shower**—includes getting into and out of a tub or shower stall.

**Walking or Using Wheelchair**—includes walking, or using wheelchair, once in a seated position, indoors.

**Stairs**—includes going up and down 12-14 stairs (one flight).

**Comprehension**—includes clear comprehension of either auditory or visual communication.

**Expression**—includes clear expression of either verbal or nonverbal language.

**Social Interaction**—includes skills related to getting along and participating with others in therapeutic and social situations.

**Problem Solving**—includes skills related to using previously learned information to solve problems of daily living.

**Memory**—includes skills related to awareness in performing daily activities in an institutional or community setting.

Expert clinicians and researchers in the field have found that the FIM adequately measures functional activities. During the trial phase of its development, 891 clinicians assessed 250 patients at 25 facilities. Only 17% of the clinicians would have added more items to the FIM.
Furthermore, the trial group believed that the instrument appropriately assessed the severity of the disabilities. In answer to "How would you rate the FIM as a measure of severity of disability on a 1 to 5 scale with 1=poor, 3=ok, 5=excellent", the responses averaged 3.44 (Hamilton, et. al., 1987).

One way analysis of variance was used to measure reliability of the FIM. In assessing interrater agreement, 303 pairs of clinicians twice administered the FIM to patients. The intraclass correlation on admission assessments was .86 and at discharge was .88 (Hamilton, et. al., 1987). This indicated high level of agreement between clinician pairs.

The Functional Independence Measure was designed as an easily administered assessment tool to be widely disseminated. As such, a simple four-level scale was incorporated to measure each of the functional items:

"Four points-COMPLETE INDEPENDENCE-all of the tasks described as making up the activity are typically performed safely without modification, assistive devices, or aids, and within a reasonable time. Three points-MODIFIED INDEPENDENCE-Activity requires any one or more than one of the following: an assistive device, more than reasonable time, or safety (risk) considerations. Two points-MODIFIED DEPENDENCE-The subject expends half (50%) or more of the effort. One point-COMPLETE DEPENDENCE-The subject expends less than half (less than 50%) of the effort. Maximal or total assistance is required, or the activity is not performed".
A more complete description of the functional measures begins on page 14 of Appendix C.

As the study progressed, all corporate hospitals suggested that more precision in measuring the degree of change would be helpful in the future. They related that a scale with more than four intervals is needed to explain small changes that occur during hospitalization. A more sensitive scale is needed, they explained, to periodically discuss a patient's progress with payers of care. However, most agreed with the developers of the FIM that a four point scale was adequate to measure total overall change in patient functioning from admission to discharge. Thus, for purposes of the dissertation, the four point scale was selected.

In addition to UDS information, two other data files of information on nonprofit medical rehabilitation organizations were made available for this dissertation by researchers from the Department of Rehabilitation Medicine at the State University of New York at Buffalo. The data were for twenty-five nonprofit organizations collected between 6/85 and 3/86. These data had been previously used in testing the validity and reliability of the Functional Independence Measure. A second data file of five nonprofit organizations was also made available. These data were selected for two reasons. First, the data from these organizations were collected during the same period, January through March 1987, that the for-profit data were collected. Second, the Buffalo researchers indicated that due to compliance problems with local hospital staffs, it had been difficult to obtain completed coding sheets. The data from the five nonprofit organizations were selected because they provided more
complete information than data from other organizations. Due to concerns of confidentiality, the Buffalo researchers would not provide information identifying the organizations in either sample. They also cautioned that the data may not be representative of the larger population of nonprofit organizations. However, without suggesting that the findings be generalized to the total population, comparisons based on ownership of organizations (nonprofit and for-profit) are made in this dissertation.

At times, in the dissertation, the total number of patients used in calculations may differ slightly among variables. This is due to responses which are missing from the coding sheets. However, among corporate facilities, compliance in completing UDS information was extremely high. There were very few partially completed coding sheets. This may be attributed, in part, to the authority of the investigator who readily rejected incomplete work. But the cooperation also was due to the belief, widely-held throughout this chain of for-profit facilities, that more quantitative measures would soon be demanded by payers of rehabilitative care. By collectively assembling and analyzing data, the corporation’s facilities believed that they could have the necessary information needed for future business decisions.

In this dissertation, efforts have been made to compare samples of like populations. For this reason, various demographic variables such as age, sex, and vocational status are discussed when relevant and when information is available. Also, comparisons of samples are often made by looking at the results of care given to one particular group of patients, the patients who had suffered Strokes. Usually, this category of patients
contained the largest number of patients assessed at a facility, and often provided the most complete data set for comparing results.

**Operational Definitions**

Tabulations compare gains in patient functioning (quality) among organizations for aggregates of patients as well as the costs to bring about those aggregated patient gains (efficiency). A clear understanding of how these two concepts are measured is important.

At the time of admission, each patient's level of functioning is measured according to the eighteen FIM items which have been previously listed. If complete independence (four points) is observed for each of the eighteen items, then a maximal total score of 72 is possible. A minimal total score of 18 is possible when all items are observed at a complete dependency level. Thus, scores could range between 18 and 72.

Functioning is measured again when the patient is discharged. The difference between the total FIM score at admission and the total FIM score at discharge is the gain (or loss) in a patient's functioning.

Efficiency is defined as the sum of a patient's benefits or functional gains, while hospitalized in a medical rehabilitation facility, divided by the cost of providing the care. When data are available, two specific ratios are calculated to aid analysis. First, the charge efficiency, is the ratio between a patient's total FIM point gain and the charges billed to the patient. The total charges are only those charges that have accrued while the patient was hospitalized in the medical rehabilitation facility. They do not include acute hospital charges. The total charges are expressed in
$1,000. units. For example, if a patient's total functional gain from admission to discharge is 10 points, and the total charges billed during inpatient medical rehabilitation were $20,000, then the charge efficiency would be 10/20 or .50.

The second dimension of efficiency (length of stay) is the ratio between total FIM point gain and the patient's length of stay in days. For example, if a patient's functional gain is 12 FIM points, and the patient was hospitalized in the medical rehabilitation hospital for 36 days, the length of stay efficiency would be 12/36 or .33.

With both ratios, the higher the resulting number calculated, the greater the efficiency. That is, a hospital with a charge efficiency ratio of .5 could be considered more efficient than a hospital with a charge efficiency ratio of .3. Likewise, a length of stay efficiency of .4 is believed to be more efficient than a length of stay efficiency of .2. It is also important to remember that both ratios use only proxies which represent the cost of rehabilitation. During medical rehabilitation, the total effort expended and resources consumed (staff education expenses, facility depreciation, bad debts, etc.) are only approximated by using charges and the length of a patient's stay as variables.

By combining both quantitative data derived from the Uniform Data Set with qualitative information collected by the researcher, insights can be gained into the delivery of medical rehabilitation. It is recognized that generalizations from the twenty-one facilities to the universe of medical rehabilitation organizations may not be appropriate. However, an important objective in this study is to suggest new issues and perspectives for
future research.
Health care organizations owned by public bodies have not been financed to the degree that private organizations have, nor have they been encouraged to grow in numbers. In our society, governmental policies have instead strengthened the private health care sector. As a result, a pluralistic competition between private nonprofit health care organizations and private for-profit health care organizations has been encouraged. The recent growth of for-profit medical rehabilitation organizations has been a phenomenon in tandem with the increasing demand for more medical rehabilitation services and a trend closely monitored by the nonprofit industry. Not surprisingly, controversy exists as to whether or not this proprietary trend will lead to improved patient care. In The For-Profit Hospital, Darr (1986:57-58) observes,

"At the extremes are those who argue that the profit motive is incompatible with the delivery of high-quality care. They assert that there is an inherent conflict of interest between doing what is good for the patient and what is good for the bottom line, and that delivery for health services is far too personal a thing to be achieved with an acceptable level of quality when consideration must be given to profit and shareholders. At the other extreme are those who assert
that medical care is basically like any other service activity. They argue the customer must be served in the best way possible and that nothing is inherently contradictory in seeking to profit from such endeavors."

The controversy was clearly an issue for most employees employed by the corporation. At one hospital during a department head meeting, the concern was raised, "If you want us to market the hospital’s programs, please help us find ways to discuss the difference between for-profit and nonprofit hospitals. This is the first question that the doctors ask. This is the biggest problem we have." This issue also affected employees when they were away from their local communities. An employee related an incident which occurred at a professional conference. The employee was seated at a large lunch table enjoying the social time with other conference participants. One of those seated had earlier been designated the table’s hostess. The hostess began asking individuals to inform everyone of their name and hospital. According to the employee, "As soon as I told the group that I was from ______, the hostess alerted the group that my hospital was a for-profit organization that had been built just to make money. From that point on the group began excluding me from the conversation."

When research has been conducted to examine the differences between for-profit and nonprofit health care organizations, findings indicate that hospitals in both categories of ownership are quite similar when important structural indicators are compared. In 1986, the Institute of Medicine (IOM) compared hospital accreditation reviews, medical staff
credentialing procedures, numbers of certified physicians and other structural variables thought to impact the quality of care provided by the two hospital groups. Their analysis concluded that in regards to quality of care, nothing was found to suggest that public policy changes should be based on ownership.

Since the Institute of Medicine report, Herzlinger and Krasker (1987), authors of another widely publicized study, evaluated the structural characteristics of nonprofit versus for-profit hospitals, they also found similar patient care results at both types of organizations. But, these researchers concluded that for-profits are better for society because no societal investments are needed to keep them afloat. Further, they charged that nonprofit hospitals are dominated by powerful physicians who have organized the hospitals for their own convenience rather than that of the patients. As for efficiency, the researchers concluded that for-profit organizations are more efficient than nonprofits because for-profits are subject to stock market discipline while nonprofits are not.

In the corporation, local administrators understood that there was some kind of relationship between the stockmarket and their organization and this made them uneasy. They often spent time with each other trying to hypothesize future directions that the company would be taking as a result of the latest Dow Jones report. In fact, stock market quotations were often used as a greeting between managers, "Do you know what the stock is at today?" "Did you see the latest memo from the corporate office? Must be due to the market. The stock hasn't done well lately." Not
surprisingly, a subscription to the Wall Street Journal became a mandatory expense for each hospital administrator.

Both of these recent studies, the Institute of Medicine and the Herzlinger and Krasker, have been criticized because information used in the analyses was gathered prior to the introduction of the prospective payment reimbursement system.

In one attempt to specifically study efficiency in medical rehabilitation organizations, ownership was considered as a variable. It was found that in certain regions of the United States, for-profit organizations had the longest average length of patient stay when compared to government-owned or nonprofit organizations (National Association of Rehabilitation Facilities, 1984). One explanation of this finding could be that patients admitted to for-profit facilities are provided with more time to complete their rehabilitation programs. Thus, the likelihood of a successful outcome of the process is greater. However, in a different interpretation, the for-profit hospital could be accused of keeping the patients longer so that more charges could be billed to payers. Clearly, without more information, an explanation is not testable from the descriptive statistics alone.

**Quality and Efficiency Compared**

In medical rehabilitation, comparing data on nonprofit organizations with the for-profit data continues to be problematic because a common classification and patient assessment instrument has not been accepted by the field. One is needed before accurate comparisons can be made. The
widely recognized need for a common data collection instrument has led to the development of the Uniform Data Set. However, because the Uniform Data Set (UDS) is so new in its dissemination, quality and efficiency norms as measured by the instrument, have not been published. However, for this dissertation, samples of nonprofit data were obtained from the developers of the UDS. Due to the sensitive nature of publishing data which can be misconstrued as generalizable performance norms by third party payers, the Task Force for the Development of the Uniform Data System for Medical Rehabilitation has been reluctant to release findings based on UDS data. Sample data which have been released are not claimed to be representative of the total population of rehabilitation organizations. In this study, these samples of nonprofit organizations are compared to organizations within the for-profit corporation.

Data from one sample were used by the developers in introducing the UDS to the rehabilitation community. The sample comes from data which were obtained during the trial phase of testing the instrument. Records of facility ownership were not collected in that phase. However, the developers believed that the sample was composed almost if not exclusively of nonprofit organizations. Between 6/85 and 3/86, data were collected on 226 patients discharged from 25 organizations. The average FIM score on admission for the trial sample was 39.6 and the average gain in FIM points was 9.27. This is compared with the corporate for-profit sample, collected 1/87-3/87 on 1903 patients who had an average FIM Admission score of 44.96 and an average FIM point gain of 9.44. The for-profit group had a slightly higher gain but also admitted less disabled
patients (Table 1). These calculations may be found in Appendix D. Unfortunately, it is not possible to disaggregate the nonprofit data to conduct tests of significance.

The two samples differ in the numbers of patients found in the various impairment categories (Table 2). For example, the trial sample was composed of 52.2% Stroke patients and the corporate sample had 32.1%. In another example, the trial sample had only 0.9% patients included in the Pain impairment classification. While, the corporate sample included 11% of patients in this impairment group.

By examining these percentages, one learns that Stroke patients represent the largest impairment category in both aggregate samples. If only this category is examined, the properties of the samples are more similar than when all impairment categories are considered. It should be noted that the available nonprofit sample data for Strokes include only Stroke patients who have been admitted to the hospital for the first time and the sample of 73 patients does not include readmitted patients. The for-profit hospitals data include both first admission and readmission patients. However, five of the 21 for-profit hospitals reported that at least 98% of their patients were first admissions. So, if data from only the five for-profit hospitals are used, a reduced for-profit sample of 165 patients becomes more similar to the nonprofit sample. Now, both samples are composed almost exclusively of Stroke patients who are being admitted to rehabilitation facilities for the first time (Table 3). Calculations for this table may be found in Appendix E.
<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>Ave. Admission FIM Score</th>
<th>Ave. FIM Point Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonprofit Trial Sample</td>
<td>39.60</td>
<td>9.27</td>
</tr>
<tr>
<td>N=226</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For-Profit Sample</td>
<td>44.96</td>
<td>9.44</td>
</tr>
<tr>
<td>N=1903</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1

Comparison of Nonprofit and For-Profit Organizations Aggregates of All Patients and All Impairment Categories
Table 2

COMPARISON OF NONPROFIT TRIAL AND FOR-PROFIT SAMPLES BY IMPAIRMENT CATEGORIES

<table>
<thead>
<tr>
<th>IMPAIRMENT CATEGORIES</th>
<th>NONPROFIT SAMPLE %</th>
<th>FOR-PROFIT SAMPLE %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=226</td>
<td>N=1903</td>
</tr>
<tr>
<td>STROKE</td>
<td>52.2</td>
<td>32.1</td>
</tr>
<tr>
<td>BRAIN DYSFUNCTION</td>
<td>10.2</td>
<td>8.6</td>
</tr>
<tr>
<td>NEUROLOGIC CONDITIONS</td>
<td>4.9</td>
<td>4.6</td>
</tr>
<tr>
<td>SPINAL CORD DYSFUNCTION</td>
<td>12.4</td>
<td>6.2</td>
</tr>
<tr>
<td>AMPUTEE</td>
<td>8.8</td>
<td>5.5</td>
</tr>
<tr>
<td>ARTHRITIS</td>
<td>3.1</td>
<td>4.6</td>
</tr>
<tr>
<td>PAIN SYNDROME</td>
<td>0.9</td>
<td>11.0</td>
</tr>
<tr>
<td>ORTHOPEDIC CONDITIONS</td>
<td>5.8</td>
<td>20.1</td>
</tr>
<tr>
<td>CARDIAC</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>PULMONARY</td>
<td>0.4</td>
<td>1.2</td>
</tr>
<tr>
<td>BURNS</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>CONGENITAL DEFORMITIES</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>OTHER DISABLING IMPAIRMENTS</td>
<td>1.3</td>
<td>5.4</td>
</tr>
<tr>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
<tr>
<td>TYPE OF SAMPLE</td>
<td>AVE. ADMISSION FIM SCORE</td>
<td>AVE. FIM POINT GAIN</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td><strong>NONPROFIT TRIAL SAMPLE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% FIRST ADMISSIONS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVE. AGE=65 YEARS</td>
<td>39.9</td>
<td>12.1</td>
</tr>
<tr>
<td>MALES=53.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEMALES=46.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FOR-PROFIT SAMPLE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>98% FIRST ADMISSIONS</td>
<td>34.5</td>
<td>12.5</td>
</tr>
<tr>
<td>AVE. AGE=71.6 YEARS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALES=54%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEMALES=46%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Demographic information indicates that the nonprofit sample is a slightly younger group with a mean age of 65 years compared to the for-profit sample with a mean age of 71.6 years. However, gender composition is very similar in both samples. In this analysis, the average admission FIM score of the nonprofit sample is 39.9 with an average FIM point gain of 12.1. The average admission FIM of the for-profit sample is 34.5 with an average FIM point gain of 12.5.

Thus, comparison of performance according to quality by using this trial sample data indicate that for-profit organizations are very similar to nonprofit organizations in producing patient outcomes. Unfortunately, tests of significance are not possible with the available data. Also, data to compare the efficiency of providing the rehabilitative care, in terms of costs and length of stay, were not available for this sample of nonprofit organizations.

When corporate data are compared to a more recent sample of nonprofit data, the results also suggest similar outcomes for nonprofit and for-profit medical rehabilitation organizations. Nonprofit data were obtained for the period January-March 1987 from five nonprofit hospitals. The dates of data collection are the same for both nonprofit and corporate samples. This nonprofit sample was chosen because of completeness of data sets. No attempt was made to randomize the sample. However, in addition to functional assessments, limited demographic data were also collected in an attempt to determine similarities and differences in the samples. An example is shown in Table 4 where data are grouped according to pre-admission activity. When the vocational status of
<table>
<thead>
<tr>
<th>Vocational Status</th>
<th>% Nonprofit</th>
<th>% For-Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Employed (Competitive Setting)</td>
<td>16.5</td>
<td>18.6</td>
</tr>
<tr>
<td>2. Sheltered Employment</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>3. Student</td>
<td>1.0</td>
<td>1.6</td>
</tr>
<tr>
<td>4. Homemaker</td>
<td>14.6</td>
<td>14.0</td>
</tr>
<tr>
<td>5. Unemployed</td>
<td>7.8</td>
<td>6.7</td>
</tr>
<tr>
<td>6. Retired (60 Yrs+)</td>
<td>45.6</td>
<td>52.0</td>
</tr>
<tr>
<td>7. Retired due to Disability</td>
<td>12.6</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>99.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>
patients admitted to the nonprofit and for-profit organizations are examined, a very similar pattern is revealed.

Patients were also divided according to major payment sources (Table 5).

Unfortunately, as was the situation with the trial sample data, the more recent nonprofit sample varied significantly from the for-profit sample when the percentages of patients in the various impairment categories are compared (Table 6). Since 99% of the patients in the more recent sample were contained within six impairment categories, the corporate sample was altered to include only those patients whose impairments were also included within the same six categories (Table 7).

Results of the comparison are shown in Table 8 and calculations may be found in Appendix F. Patients showed a higher average gain in the nonprofit organizations, 11.6 versus 10.3.

However, it may be argued that the higher percentage of Stroke patients in the nonprofit group and the higher percentage of Spinal Cord Dysfunction patients in the for-profit group could explain the 1.3 difference in average gain. Unfortunately, it is not possible to disaggregate available data to test this hypothesis. When only Stroke patients are considered for comparison, the average FIM point gain becomes closer when comparing nonprofit medical rehabilitation organizations with for-profit medical rehabilitation organizations (Table 9). Calculations for this table are contained in Appendix G.
Table 5

COMPARISON BY PAYMENT SOURCES

<table>
<thead>
<tr>
<th>PAYMENT SOURCE</th>
<th>% NONPROFIT</th>
<th>% FOR-PROFIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLUE CROSS</td>
<td>7.8</td>
<td>8.3</td>
</tr>
<tr>
<td>MEDICARE</td>
<td>67.0</td>
<td>63.4</td>
</tr>
<tr>
<td>MEDICAID/WELFARE</td>
<td>5.8</td>
<td>3.4</td>
</tr>
<tr>
<td>COMMERCIAL</td>
<td>9.7</td>
<td>13.6</td>
</tr>
<tr>
<td>OTHER</td>
<td>9.7</td>
<td>11.3</td>
</tr>
<tr>
<td></td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
### Table 6

Comparison of Nonprofit Sample and For-Profit Sample by Impairment Categories

<table>
<thead>
<tr>
<th>Impairment Categories</th>
<th>% Nonprofit</th>
<th>% For-Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=103</td>
<td>N=1903</td>
</tr>
<tr>
<td>StROKE</td>
<td>59.2</td>
<td>32.1</td>
</tr>
<tr>
<td>Brain Dysfunction</td>
<td>16.5</td>
<td>8.6</td>
</tr>
<tr>
<td>Neurologic Conditions</td>
<td>7.8</td>
<td>4.6</td>
</tr>
<tr>
<td>Spinal Cord Dysfunction</td>
<td>3.9</td>
<td>6.2</td>
</tr>
<tr>
<td>Amputee</td>
<td>9.7</td>
<td>5.5</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1.9</td>
<td>4.6</td>
</tr>
<tr>
<td>Pain Syndrome</td>
<td>1.0</td>
<td>11.0</td>
</tr>
<tr>
<td>Orthopedic Conditions</td>
<td>0.0</td>
<td>20.1</td>
</tr>
<tr>
<td>Cardiac</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>0.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Burns</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Congenital Deformities</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Other Disabling Impairments</td>
<td>0.0</td>
<td>5.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0</td>
<td>100.1</td>
</tr>
</tbody>
</table>
### Table 7

Comparison of Nonprofit Sample and For-Profit Sample by Six Impairment Categories

<table>
<thead>
<tr>
<th>Impairment Categories</th>
<th>Nonprofit %</th>
<th>For-Profit %</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=102</td>
<td>N=1174</td>
<td></td>
</tr>
<tr>
<td><strong>STROKE</strong></td>
<td>59.2</td>
<td>52.1</td>
</tr>
<tr>
<td><strong>BRAIN DYSFUNCTION</strong></td>
<td>16.5</td>
<td>14.0</td>
</tr>
<tr>
<td><strong>NEUROLOGIC CONDITIONS</strong></td>
<td>7.8</td>
<td>7.6</td>
</tr>
<tr>
<td><strong>SPINAL CORD DYSFUNCTION</strong></td>
<td>3.9</td>
<td>10.1</td>
</tr>
<tr>
<td><strong>AMPUTEE</strong></td>
<td>9.7</td>
<td>8.9</td>
</tr>
<tr>
<td><strong>ARTHRITIS</strong></td>
<td>1.9</td>
<td>7.4</td>
</tr>
<tr>
<td><strong>NEURITIS</strong></td>
<td>99.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### Table 8

Comparison of Nonprofit and For-Profit Organizations by Aggregate of Six Impairment Categories (Stroke, Brain Dysfunction, Neurologic Conditions, Spinal Cord Dysfunction, Amputee, and Arthritis)

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>Ave. Admission FIM Score</th>
<th>Ave. FIM Point Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonprofit Sample</td>
<td>39.6</td>
<td>11.6</td>
</tr>
<tr>
<td>N=103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For-Profit Sample</td>
<td>40.4</td>
<td>10.3</td>
</tr>
<tr>
<td>N=1173</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9

COMPARISON OF NONPROFIT ORGANIZATIONS AND FOR-PROFIT ORGANIZATIONS BY STROKE PATIENTS

<table>
<thead>
<tr>
<th>TYPE OF ORGANIZATION</th>
<th>AVE. ADMISSION FIM SCORE</th>
<th>AVE. FIM POINT GAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONPROFIT SAMPLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=61</td>
<td>35.2</td>
<td>12.3</td>
</tr>
<tr>
<td>AVE. AGE=70.9 YEARS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALES=46%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEMALES=54%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOR-PROFIT SAMPLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=165</td>
<td>34.5</td>
<td>12.5</td>
</tr>
<tr>
<td>AVE. AGE=71.6 YEARS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALES=54%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEMALES=46%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Average FIM gain for the nonprofit group is 12.3 compared to the for-profit group's average FIM gain of 12.5. The mean age of the samples is extremely close, and there does not appear to be a significant difference in percentage of males versus females.

Unfortunately, the exact percentage of first admission Stroke patients admitted to the nonprofit organizations was not available. However, the source of the data strongly believes that the percentage of first admissions is very high. The percentage of first admission Stroke patients included in the for-profit sample was also very high at 98%.

In regard to efficiency comparisons, Stroke data are available to examine the average length of stay of patients admitted to both types of facilities, and charge data are also available. By combining these two indicators with the Average FIM gains of the two types of organizations, efficiency ratios can be determined. As Table 10 illustrates, the length of stay efficiency ratios between the nonprofit organizations and the for-profit organizations are close. The charge efficiency ratios, however, show a dissimilar efficiency rating. By having a lower charge efficiency, it appears that this sample of for-profit medical rehabilitation hospitals charge more than the sample of nonprofit organizations charge in obtaining similar results. Calculations are available in Appendix H. Unfortunately, the aggregated data does not permit tests of significance to be conducted.

These findings support the conclusion arrived at by the Institute of Medicine's (1986) study on for-profit hospitals which indicated that for-profit hospitals had charged more for their services than nonprofit hospitals.
### Table 10

**Comparison of Efficiency by Ownership for Stroke Patients**

<table>
<thead>
<tr>
<th>Type of Ownership</th>
<th>Length of Stay Efficiency</th>
<th>Charge Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonprofit Sample</td>
<td>.44</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td>N=61</td>
<td>N=61</td>
</tr>
<tr>
<td>For-Profit Sample</td>
<td>.40</td>
<td>.66</td>
</tr>
<tr>
<td></td>
<td>N=162</td>
<td>N=165</td>
</tr>
</tbody>
</table>
When examining payment source data, the information on average charges for three specific impairment groups shows that the for-profit charges to commercial insurance patients are consistently higher than charges billed to Blue Cross, Medicare or Medicaid/Welfare patients (Table 11). This suggests that the corporate organizations focused on maximizing their reimbursement from the commercial insurance category of payers. Observations of corporate behavior bare this out. For example, at a corporate meeting, when local administrators complained that the corporation's central financial office had set excessive prices for services in their communities, and that buyers who pay for billed services would balk, officers countered that high prices were often perceived as being related to high quality and were necessary.

More puzzling is the finding that the second highest total charges were for Medicaid/Welfare patients. This perhaps can be explained by suggesting that this group of patients, collectively, require more overall medical and rehabilitative care than the other categories of patients. However, more study is needed before generalizing this finding.

In this study, the three particular impairment categories: Stroke, Brain Dysfunction and Neurologic Conditions, were selected to compare charges because in these impairment groups, samples were large enough to study all four major payers. However, more data are needed, before generalizing these results to the population of for-profit medical rehabilitation organizations.

Access to medical rehabilitation services by all classes of patients is also an issue in the field. Within the industry, it is generally known
Table 11

COMPARISON OF AVERAGE CHARGES/CASE BY MAJOR PAYMENT SOURCE FOR THREE IMPAIRMENT CATEGORIES (STROKE, BRAIN DYSFUNCTION, AND NEUROLOGIC CONDITIONS)

<table>
<thead>
<tr>
<th>IMPAIRMENT CATEGORY</th>
<th>BLUE CROSS</th>
<th>MEDICARE</th>
<th>MEDICAID</th>
<th>COMMERCIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>STROKE</td>
<td>$18,233</td>
<td>$18,034</td>
<td>$25,089</td>
<td>$26,565</td>
</tr>
<tr>
<td>* of patients</td>
<td>33</td>
<td>465</td>
<td>22</td>
<td>56</td>
</tr>
<tr>
<td>BRAIN DYSFUNCTION</td>
<td>$27,551</td>
<td>$18,034</td>
<td>$31,323</td>
<td>$35,351</td>
</tr>
<tr>
<td>* of patients</td>
<td>14</td>
<td>43</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td>NEUROLOGIC CONDITIONS</td>
<td>$15,754</td>
<td>$15,389</td>
<td>$17,702</td>
<td>$20,425</td>
</tr>
<tr>
<td>* of patients</td>
<td>13</td>
<td>50</td>
<td>5</td>
<td>17</td>
</tr>
</tbody>
</table>
that patients who can pay billed charges, through their own financial
resources or through their insurance, are sought after by both nonprofit
and for-profit medical rehabilitation organizations. Often for-profit
organizations are accused of "skimming" communities by admitting only
affluent, commercially insured patients. Unfortunately, data are not
available to compare differences in accessibility between nonprofit
inpatient medical rehabilitation organizations and for-profit
organizations. However, data show that the for-profit inpatient medical
rehabilitation organizations accepted all financial classes of patients.

In the corporate facilities, the payment potentials of patients were
assessed before and during hospitalization. This is understandable since
these organizations must monitor their fiscal budgets if they are to
survive in a competitive market. To encourage the admission of the more
profitable patient, the corporate organizations hired patient recruiters
who aggressively looked for commercially insured medical rehabilitation
patients, locally and regionally. In some facilities, patient recruiters
were paid incentive bonuses according to the number of commercially
insured patients that were admitted. However, in most of the for-profit
facilities, if beds were empty, indigent patients were admitted. The
rationale was that although more profit could be made from the
commercial patients, even reimbursement from indigent patients would
contribute to covering the organizations fixed costs. Besides, in some
communities, the admissions of some indigent patients were expected by
physicians. A referring physician would tell an administrator that in order
to get his commercial referrals, the hospital would have to be a
good community member and take an occasional indigent patient just as he, the physician did.

**The Profit Motive**

Data in this chapter suggest that similar care is provided in both nonprofit and for-profit facilities. But how strong was the profit motive in the corporation's medical rehabilitation organizations? Certainly, profit, "the bottom line", was viewed by most administrators as the primary objective of the organization, and the behavior in which they would be evaluated. In fact, a significant credibility gap existed between the corporate managers and local administrators when issues about the quality versus the profit of services were discussed. At one retreat, a small group of hospital administrators were asked to meet one evening with a corporate employee who would facilitate a discussion on quality. Suggested reading on the topic had been sent to the administrators prior to the retreat. The purpose of the meeting was to arrive at suggestions for implementing a corporate-wide quality improvement program. The individual participant's comments were to be kept confidential, but the corporate officers expected that a composite of honest and candid comments about the corporation's plan to develop a system-wide program would be forthcoming. At the next corporate executives' meeting, the facilitator reported on his meeting with the hospital administrators. He warned the executives, however, that they may have gotten more honesty than they wanted. The administrators sent a very clear message, "We do not believe that the concern for quality is really a part of this
corporation's culture."

While attention to quality was not often monitored or discussed at the corporate level, it was on the minds of local rehabilitation professionals. Perrow (1961) helps us understand this situation. In complex organizations, the official goals of a corporation, in this case, maximizing profits, are often different from the day to day operative goals, or local choices that are made. Day to day choices in medical rehabilitation organizations are made by health professionals not by owners. Health professionals, due to their extensive training, ethical codes of performance and legal responsibilities demand autonomy in patient care decisions; and in fact, are often able to maximize their individual preferences in medical rehabilitation organizations.

Numerous examples of local health professions exercising their perogatives were observed. One such incident of several professional staff expending effort and resources was observed in a Florida facility. A spinal cord patient had requested to smoke a cigarette, but a piece of adaptive equipment was needed since the patient did not have the full use of his arms and hands. The proper equipment was not available at the newly built hospital. The staff, however, believed that this request was a sign that the disabled man was taking his first steps toward independent living and that support had to be given to that effort. So, rather than explaining to the patient that the adaptive device was unavailable, or that the patient should try to stop smoking, or that a device would be ordered in next month's supplies, they began to search for a way to immediately obtain the piece of special equipment. First, the local therapy
departments within the corporation were telephoned and asked whether
the device was available. None was found. Then, catalogues were searched
and supply houses were called until just the right type of device was
located to meet the patient's unique problem. The equipment was ordered
and rush delivered. In this simple example, the rehabilitation process of
treating this spinal cord injured patient could have been different. Less
staff time and costs could have been expended and more profit could have
been realized. However, the local health professionals made decisions and
provided, in their judgment, the type of quality rehabilitation required.

Within a national for-profit corporation, local health care
professionals daily balance the power of owners with the needs of
patients. It is the significant power of health care professionals working
within the complexity of the medical rehabilitation organization that
prevents ownership from being an important determinant in the inpatient's
course of care.
Emergence

Health care organizations in the United States serve a variety of special interests. From patients to healers, from regulators to consumer advocates, from students to stockholders, our health care organizations serve as the arena for coalitions of special interest groups in their attempts to gain dominance in social action. Under pressure to deliver a panoply of services within a community, these organizations have developed institutionalized norms with pluralistic decision structures. Within these organizations, health care professionals have gained significant influence, and have been successful in protecting self interests. As a result, an inertia, or reluctance to endorse change is common in these organizations.

Litman (Litman and Robins, 1984:15) has asserted, "It has long been a truism of U.S. political life that government is only permitted to do that which private institutions either cannot or are unwilling to do". During the 1970s, with a rapidly escalating price for health care services, coalitions of economic participants began speaking of the abuse of
professional power in health care delivery and of the need for change. The buyers of health care services, of which the government is the largest, lined up against the professional elites and the dominance of medicine began to waver. The past accommodations by the government to the industry were reassessed, and on October 1983, new rules for financing the delivery of health care were implemented.

Under the new plan, patient bills submitted to the federal government were paid by a predetermined rate regardless of the costs incurred by the organization. Analysts predicted that this new federal method could be adopted by private insurance companies as well. The result would be a more competitive marketplace and participants would be forced to reformulate their relationships.

Among health care professionals, there was concern that economic cost cutting measures would have prominence over quality of care decisions. Goldsmith (1981:xv) wrote in *Can Hospitals Survive? The New Competitive Health Care Market*, "Changing economic opportunities will challenge hospitals and physicians to redefine the terms of their often troubled relationship, and seek mutual opportunities in an era of increasing scarcity of patients and income. The advent of scarcity, after decades of unimpeded economic growth and prosperity, will force both managers and professionals to rethink how they define their businesses." As will be seen, it is this turbulent environment that provided the womb for rapid growth in the number of medical rehabilitation organizations.

In our communities, the breadth of health care services available varies considerably. Depending on where one lives, a patient may or may
not be offered additional restorative health care services following the stabilization of an acute illness or trauma. Prior to the change in the government's prospective payment policies, a medical staff officer in a large community hospital was asked about expanding his local hospital's services to include a medical rehabilitation program. He clearly stated his position, "I don't want those types of patients (recovering Stroke patients) mixing with my patients. They are just too depressing and too messy. They should be somewhere else, not here!" Unfortunately, in that community as in many other communities, none or little of the needed rehabilitative care was available for most patients, and finding rehabilitative care somewhere else often meant traveling significant distance, being separated from family and friends and accruing large financial debts.

The Role of the Entrepreneur

"The entrepreneur always searches for change, responds to it, and exploits it as an opportunity" (Drucker, 1985:28).

Within the field of medical rehabilitation, the entrepreneur found a confluence of ambiguous ideas and organizational inertia. The combination of these two conditions provided an environment which was ripe for change and exploitation. Let us take each of these two variables and more closely examine them.
Conceptual Ambiguity

For some time, confusion has existed within the health care arena as to what is medical rehabilitation and where and by whom it should be provided. Throughout its history, inconsistent usage of terms has been a widespread problem for this field and the lack of agreement as to the proper roles of medical, social, vocational and educational personnel has also been a source of conflict. Even members within one profession do not always agree on their own profession's role in medical rehabilitation. One physiatrist was observed repeatedly stating to the staff that he did not practice medicine. In the rehabilitation hospital, he explained, his role was strictly an educator. While this was an extreme statement, there is a basis for his belief. In a medical rehabilitation hospital, many hours of a patient's day and evening are spent learning or relearning social and motor skills. So, the physiatrist considered his main contribution to be education. However, it was observed that other physiatrists did not see themselves as teachers. In fact, they appeared comfortable only when discussing laboratory and electro-diagnostic results with other professional staff.

In observing the medical rehabilitation process at the corporation's various hospitals, differences in professional boundaries, the selection of rehabilitation problems and the allocation of resources were noted. However, three core characteristics appeared to be important in defining a well functioning medical rehabilitation organization:

1. Patients are not passive recipients of care as may be the situation during acute care delivery, but are motivated to actively
participant in reducing their dependency. The Commission on Accreditation of Rehabilitation Facilities (1985:9) writes, "Rehabilitation problems are behaviors or conditions exhibited by individuals and/or presented by the environment which need to be eliminated or improved in order for the individuals to fulfill their potential or maximize their functioning". On entering the rehabilitation hospitals in the corporation, most patients were assigned space on a large multi-colored daily appointments board. Outlines of the patient's entire day were visible to everyone including the patients themselves. Patients were expected to plan their own time so that they could independently travel to and from treatments. Certainly, one way that hospitals in the rehabilitation corporation were different from acute care hospitals was in the number of orderlies hired to transport patients. The number at rehabilitation hospitals was minimal indeed.

2. Inpatient medical rehabilitation is organized around an interdisciplinary team. The rehabilitation team is a group of health professionals with complementary skills, working together toward the successful accomplishment of common health care objectives. Rehabilitation literature generally accepts, without question, the efficacy of team care, a collaborative model of interprofessional work. Yet, there is a lack of analytical research on the benefits of interdisciplinary team care. At the corporate facilities, non-physicians seemed to embrace the belief that interdisciplinary discussion was needed when making patient care decisions. In general, however, physicians were not as convinced of the need for large interdisciplinary teams. Often, they were quite
selective about requesting and recording information from others.

3. The care provided at inpatient medical rehabilitation organizations is comprehensive. In rehabilitation, the failure to address the multiple needs of an individual can lead to a compromise in the quality of process and eventual outcome. The complexity of rehabilitation problems requires the management of functional, psychosocial as well as pathophysiological needs of patients. "Comprehensive means the team cannot ignore social problems and emphasize the relative security and certainty of medical problems" (Rubin and Beckhard, 1972:322).

The staff at one rehabilitation hospital related the difficulty it had in agreeing on which needs of a patient would be met. One area of dispute involved how to organize weekend schedules. The majority of the staff believed that weekend schedules should include the type of weekend activities that were common to people who were not hospitalized. Monday through Friday would be designated for regular treatments, but Saturday and Sunday were for patients to shop, return to their homes to test daily living skills, and to plan other normal events such as sleeping late and going to a Sunday brunch. However, those paying for the rehabilitation care, had started to question whether these types of activities were appropriate for hospitalized patients and were threatening to withhold reimbursement. As a result, the more traditional, reimbursable therapy treatments were emphasized on weekends, instead of creatively planning rehabilitation activities for the needs of the "whole" person.
Acute Care Inertia

After the prospective payment system was introduced, physician contributions to acute care organizations were judged by new rules. Management technology now fosters individual score cards which rate physicians not only on the quality of the care they provide or even the number of patients they admit to the facility, but rather compare physicians' performance on the basis of preestablished economic norms. In other words, are the costs generated by a physician above or below the already determined federal payment limit? Would the physician's actions cause the organization to realize a financial profit or a financial loss?

As a result of this monitoring, traditional coalitions began to erode. Physician power based on tradition diminished and power shifted to those contributors whose patterns of practice more successfully met federal payment guidelines. Moreover, suspicion and anger rather than cooperation often greeted the administrator or medical staff officer, and managers became reluctant to introduce a new service which could be seen as a threat to the existing participants. Particularly, a service like medical rehabilitation whose medical specialty was held in low esteem within most of the medical community, was to be avoided. A neurologist from a midwest city defined the problem, "Medical rehabilitation is not yet legitimate within medicine because the specialty does not have enough of a scientific base. Their journals just do not have the right kind or enough good research."

In his 1981 Presidential Address to the American Academy of Physical Medicine and Rehabilitation, Fowler substantiated the
neurologist’s observation. According to Fowler (1982), there has been disinterest among modern physiatrists to engage in research. He notes that in their own professional journal, Archives of Physical Medicine and Rehabilitation for 1979-1980, only 34% of all major articles had a physiatrist as the first author. The research for the profession, he observed, was limited to a small number of individuals and many of them were Ph.D.s and not M.D.s!

During this period of realignment, physicians were also being warned of an impending physician surplus in the United States (Department of Health and Human Services, 1980). This surplus could lead to decreased incomes so physicians were advised to protect their patient base. Some physicians were quick to defend their territory. One director of nursing related a telephone conversation that she had with a medical director of a nearby competing hospital. The medical director had wanted to complain directly to the hospital administrator about the hospital’s expansion of marketing activity, but since the administrator was out of town, the nurse had taken the call and tried to soothe the irate doctor to no avail. Finally, the angry physician screamed, “If you want a fight down there, I’ll give you one”, and slammed the receiver to the phone.

In many communities the environment of the troubled acute care hospital was not suitable for testing the introduction or expansion of medical rehabilitation. However, to the entrepreneur, this inertia, provided an opportunity to create a new and rivaling organizational setting. Selznick (1949) has noted that organizations have to come to terms with their local environments, and the entrepreneur was careful to
listen to local markets. Willingly, organizations were created based on needs as perceived by local participants. As a result, structural features of the medical rehabilitation organizations varied among locations. For example, if participants in one location believed that advanced technology should not be found in the medical rehabilitation setting, arrangements were made to transport patients to acute care hospitals or doctor's offices for diagnostic work. One hospital in the corporation bought a transportation vehicle specifically to take patients to doctor's offices so that physicians would not be inconvenienced. On the other hand, if physicians believed that technology should be on site, a sophisticated radiological scanner or other devices could be and were purchased.

Similarly, if a group of local physicians desired bylaws which permitted an open medical staff; that is, rules which would allow many admitting physicians to provide daily care to their own patients rather than transferring all or part of that care to the responsibility of a rehabilitation specialist (traditionally, a common model of organizing medical rehabilitation), then the medical staff constitution would be so written. If the local group of supporting physicians wanted to maintain close restrictive control of the privileges granted within the new organization, other rules could be written into the bylaws of the staff.

By listening to the perceived needs of local participants, the entrepreneur forged new partnerships and orchestrated new coalitions. Knowing that buyers of health care services were growing distrustful of medicine, financial backers were courted by entrepreneurs who soon became willing to venture their capital in creating new inpatient medical
rehabilitation organizations. Inpatient medical rehabilitation was offered as a lower cost product, an alternative to the high cost of acute care. Entrepreneurs also coopted and selected for financial partnerships dissatisfied physicians who became evangelists within their local medical communities. These converts saw the new organizations as vehicles for gaining influence as well as mechanisms for reaping financial rewards. Inpatient medical rehabilitation was sold as a good investment. There was no doubt that the costs associated with building and managing the new facilities would be easily reimbursed. Rehabilitation was not included in the federal prospective payment plan, therefore, the old rules of reimbursement which allowed construction costs to be passed on to federal buyers were still in effect. Furthermore, with an aging population and with advances in life saving technology, the demand for services was a surety.

From the beginning, the entrepreneurial organizations declared and advertised that they were experts in medical rehabilitation. Sometimes, acute care hospital administrators rather than physicians approached the corporation looking for ways to tap the medical rehabilitation management expertise. The corporation would accommodate by offering a menu of management services such as conducting feasibility studies, recruiting specialty physicians and specialty staff, remodeling facilities, providing start-up management or even providing ongoing management consultation. The entrepreneurial organization was committed to accommodating the needs of supporters whether they be financiers, physicians or administrators.
Some of the entrepreneur's supporters soon became accustomed to having their concerns and desires rapidly addressed and at times seemed to abuse their relationship. Local physicians were particularly bothersome. For example, because he had openly shown his support for the new rehabilitation hospital among his peers, and was one of the first major referral physicians to the hospital, one particular physician expected that the expenses of a weekend vacation taken by him and his wife should be paid by the hospital. To the physician these weekend expenses should be seen by the for-profit corporation as one of the costs of doing business. In another location, a physician, the major referral source of the small facility, expected that his wife should be given an executive position at the rehabilitation hospital. A different physician expected that the hospital would purchase outdated cardiac monitoring equipment from his office so that he would not suffer the financial loss from his bad investment. One administrator lamented that a physician at his hospital had requested that cafeteria employees wear tuxedos when serving at medical staff dinners! How to manage these types of irritations was often the topic of conversations among administrators when they met.

Entrepreneurs aggressively recruited experienced rehabilitation professionals for their facilities. One administrator recounted that in the earliest days of the corporation, there was no time for assistance of attorneys. On the same day of an interview, contracts could be drawn up with medical directors "on the spot".

In addition to recruiting health care practitioners, specialized management talent was also hired and directed to solve problems that
specifically related to the financing and the delivering of medical rehabilitation services. For example, occupational therapy, a department which in the past was considered by acute care administrators to be a poor revenue producer, was reexamined and tips were shared among administrators as to how to turn the department into one of the best profit centers in the facility. Also, construction designs were modified so that more square footage would be allocated to this specialty in future hospitals.

As another example, financial talent was hired to forecast the impact of reimbursement limitations such as those imposed by the Tax Equity and Fiscal Responsibility Act of 1982, TEFRA. Under the regulations of this law, information about the past financial practices of a local hospital are considered in establishing future rates. Since, local reimbursement limits are set based on facility-specific records, the corporate staff would, due to their expertise, advise local hospital administrators on how to set budgets to maximize their reimbursement potential. By specializing in medical rehabilitation, the entrepreneurial organization could focus its resources and its talents.

Both professional and nonprofessional staff who joined these entrepreneurial medical rehabilitation organizations were convinced that in the future there would be plenty of customers demanding medical rehabilitation. The staff, collectively believed, that it was possible to build a new health care niche and they intended to build one and dominate the market. These beliefs plus the promise of reaping future financial rewards were strong forces in the entrepreneurial movement.
The Influence of Global Attributes on Quality and Efficiency

During the first few years following the introduction of the prospective payment system, entrepreneurs fashioned a variety of organizational models for delivering inpatient medical rehabilitative services. However, the efficacy of these various models is a concern within the industry. As can be expected, disagreement centers on the concepts and methods which should be used to examine these models. In this chapter, three characteristics; location, maturity and size are hypothesized as independent variables which may influence the dependent variables of quality and efficiency. This approach to analysis was suggested by Lazarsfeld and Menzel (1961), who emphasized the importance of "global" characteristics of organizations which are not based on information about the individual members of a collective nor the relations among members of the collective. The data used here are those collected on corporate hospitals and units and are summarized in Appendix I.

1. Location

Organizational settings were self-contained medical rehabilitation hospitals and defined medical rehabilitation units. Self-contained medical rehabilitation hospitals are located within a larger medical center or at some distance from an acute care hospital. A financial relationship may or may not exist with a local acute care hospital. Defined medical rehabilitation units, on the other hand, are distinct parts or departments of acute care facilities, and some or all support services are provided by
the acute care hospital. Nationally, there are approximately six defined medical rehabilitation units for every one self-contained medical rehabilitation hospital (National Association of Rehabilitation Facilities, September, 1986).

Perrow (1961) has argued that one can predict the goals of an organization if the characteristics of the dominant group are understood. Within the field of inpatient medical rehabilitation, it has been hypothesized that the small, less dominant units located in acute care hospitals will experience more difficulty in achieving their goals than would those independent medical rehabilitation organizations located in less complex environments.

One afternoon, a discussion was held with clinical department directors who worked at one of the corporation's medical rehabilitation hospitals. The group was asked to relate their personal opinions about the quality of rehabilitative care provided at medical rehabilitation units located in acute care hospitals. Many of the clinical directors stated that they had previously worked in acute care organizations and had a difficult time visualizing a successful rehabilitation process occurring in the acute facility. As could be expected, they stressed the dependent role of patients in the acute care setting and the rigidity of administrative policies. At the same time, however, they did acknowledge that there were some advantages to being part of an acute care hospital, particularly when diagnostic testing was needed by patients or when medical emergencies arose.
Clinicians working in the medical rehabilitation units located in acute care settings were also interviewed and were asked to share their opinions about the differences in providing rehabilitation in the two settings. They complained that they believed a bias existed within the corporation. They felt that corporate executives expected that the outcomes of care in the independent hospitals would be superior to those occurring in the acute care units and this perceived bias frustrated the unit-based clinicians. These clinicians were convinced that they were delivering an excellent service to their patients, but believed that they had to try even harder than their counterparts in the independent hospital settings to attain corporate support. The expectation of better rehabilitation outcomes in independent hospitals versus outcomes in acute care rehabilitation units is not supported by data.

When data comparing the functional levels of Stroke patients is examined, the rehabilitation units located in acute care hospitals report higher gains in patient functioning at discharge than is reported by the independent medical rehabilitation hospitals. Acute care units report that the change between the FIM admission score and discharge FIM score is 15.5, while independent hospitals report a change of 11.1. Furthermore, when efficiency is analyzed, the length of stay efficiency score which is the ratio between the FIM point gain and the length of stay in days of hospitalization, indicates that the defined medical rehabilitation units are more efficient at .59 compared to the independent hospitals at .36. Likewise, the charge efficiency score which is the ratio between the FIM point gain and the amount of charges per $1000 units, indicates that the
units are more efficient at .83 than the independent hospitals at .67 (Table 12). Calculations for this table may be found in Appendix J.

Data are not available to explain these differences in FIM gain and efficiency. However, observations of the acute care units suggests that many of these organizations are receiving strong administrative support. Since the care on the unit is still financed through a retrospective cost-based system, resources are liberally allocated, and this support has tended to attract a highly qualified professional staff. As one Director of Nursing complained, too many of her better nurses want to work on the rehab floor.

2. Maturity

Since the medical rehabilitation process is highly dependent on the skills of numerous individuals, it may be necessary for the team of diverse health professionals to spend a period of time together in order to develop necessary patterns of work and social relationships. Time may be needed to establish agreements on treatment philosophies and approaches to care. To examine variation in quality and efficiency among organizations, the ages of the facilities in the corporation are used as proxies for the variable, organizational maturity.

The corporate data were dichotomized into two maturity categories of organizations. Since rapid expansion of the corporation brought about the development of many new organizations, one category is comprised of those hospitals which began accepting patients beginning in 1986. Eleven hospitals are included in this group of young organizations. Ten hospitals
<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>Average FIM Gain</th>
<th>LOS Efficiency</th>
<th>Charge Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>IND. HOSPS</td>
<td>11.6</td>
<td>.36</td>
<td>.67</td>
</tr>
<tr>
<td>N=16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNITS</td>
<td>15.5</td>
<td>.59</td>
<td>.83</td>
</tr>
<tr>
<td>N=5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
are included in the category of older organizations which had started admitting patients prior to 1986. This group includes facilities with opening dates ranging from 1961 to 1985. The younger organizations report that the overall functional gain for Stroke patients is 13.8 on the FIM scale. This compares favorably to the FIM gain of 11.1 reported by the older organizations. The younger organizations report a LOS efficiency of .44 which is higher than the .38 reported by the older facilities. The charge efficiency is also higher in the younger facilities compared to the older facilities, .42 versus .33 (Table 13). Calculations in this table are found in Appendix K.

Unfortunately, available data do not allow us to test hypotheses explaining these results. However, local interviews have led to the hypothesis that the new organizations have attracted a core of professionals who already have experience in medical rehabilitation but who were dissatisfied with the policies of their former employers. Second, in the younger organizations, it appears that open, unambiguous communication is a necessity. Due to the multitude of tasks required in organizing a new service, interdependent behaviors in the young rehabilitation organizations are observed not only in treating patients but in tasks as varied as arranging furniture and traffic patterns to maximizing public relations opportunities. The combination of experience plus effective communication may in part explain the high quality and efficiency found in the younger organizations.
<table>
<thead>
<tr>
<th>MATURITY OF ORGANIZATION</th>
<th>AVERAGE FIM GAIN</th>
<th>LOS EFFICIENCY</th>
<th>CHARGE EFFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORGANIZATION ADMITTED PTS. BEFORE 1986</td>
<td>11.1</td>
<td>.38</td>
<td>.63</td>
</tr>
<tr>
<td>N=10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORGANIZATION ADMITTED PTS. AFTER 1985</td>
<td>13.8</td>
<td>.44</td>
<td>.78</td>
</tr>
<tr>
<td>N=11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Size

Blau (1970) and others have held that the size of an organization leads to certain structural differentiation. This differentiation has both direct and indirect effects on the organization. For example, studies indicate that one consequence of increasing organizational size may be added administrative costs which are caused by increased problems in coordination.

Corporate facilities displayed a range in the number of beds per facility from 15 beds to 120 beds. In examining this variable, organizations were ordered into three groupings. Eight organizations ranged in size from 72-120 beds. Eight organizations ranged in size from 40-60 beds, and five organizations ranged in size from 15-25 beds. Results are shown in Table 14. Appendix L contains the data and calculations used in this table. The grouping of organizations which had between 15 and 25 beds reported the largest overall FIM gains and the most efficient provision of care. These smaller organizations, all of which were distinct medical rehabilitation units located in acute care hospitals, provided better outcomes. These findings suggest that for Stroke patients the size of the organization is an important variable in explaining rehabilitation outcomes. Unfortunately, data is not available to test hypotheses needed to explain these results. However, the smaller organizations were all located in acute care facilities. Therefore, it could be hypothesized that Stroke patients admitted to the rehabilitation units located in acute care facilities began receiving rehabilitative care immediately after acute care treatment had ended. Also, the care
<table>
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<th>SIZE OF ORGANIZATION</th>
<th>AVERAGE FIM GAIN</th>
<th>LOS EFFICIENCY</th>
<th>CHARGE EFFICIENCY</th>
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<td>120-72 beds</td>
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<td>.33</td>
<td>.57</td>
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<td>60-40 beds</td>
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<tr>
<td>25-15 beds</td>
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<td>.83</td>
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Table 14

ORGANIZATIONS COMPARED BY SIZE
delivered in the acute phase and the rehabilitative phase is often provided by the same person. On the other hand, the population of Stroke patients admitted to the larger rehabilitation organizations may include patients who have been transferred home or to an extended care facility before being admitted to the rehabilitation organization. These patients also may have been treated by a number of different professionals who utilize a variety of approaches to care.

It also could be hypothesized that the effectiveness of communication varies between smaller and larger organizations. In a larger organization, where staff are often separated by distance and architectural barriers, daily communication is often possible only through formal entries to the patient's medical record. In smaller organizations, informal communication is more likely to occur among staff members and may lead to more consistent approaches to rehabilitation goals.

In summary, the findings on location, maturity and size indicate that variation in the quality and efficiency at medical rehabilitation facilities may be related to these three "global" characteristics. Greater gains in patient functioning were recorded in distinct units located in that acute care hospitals than were reported by independent medical rehabilitation hospitals. More recently organized programs performed better than the older medical rehabilitation facilities. And, smaller units of 15-25 beds had considerably better scores in patient gains and efficiency than larger organizations.
Symbiosis

How long will the new entrepreneurial medical rehabilitation organizations continue to prosper, and will the new organizations become a permanent part of the health care delivery system? The answers to these questions can be partially obtained by understanding the interorganizational relationships which have developed between traditional acute care organization and the new inpatient medical rehabilitation organizations.

As has been discussed, the coercion of the new prospective financing plan brought a number of nonvoluntary changes to health care delivery. Included with the changes were new relationships among organizations within the delivery system. Under the new reimbursement system, acute care hospitals were paid a fixed rate regardless of the length of the patient's stay or the expenses involved in treating the patient. Therefore, if the length of a hospitalized patient's stay could be decreased, acute care hospitals would be better off financially. As a result, in communities where new inpatient medical rehabilitation services had been organized, acute care hospitals were able to develop earlier patterns for discharging patients. By developing transfer agreements with the new inpatient medical rehabilitation organizations, acute care hospitals actually benefited, financially, from the new reimbursement system. Likewise, new inpatient medical rehabilitation organizations benefited by quickly experiencing high patient censuses. Both organizations, acute care and the medical rehabilitation organization, benefited from the exchange relationship.
Further explanation as to the tolerance given by acute care hospitals to the new organizations is provided if one considers that not all acute care hospitals have the resources to organize nor are large enough to sustain, through their own internal admissions, a dedicated medical rehabilitation organization. Thus, in some communities, the free standing entrepreneurial organization, not owned or controlled by a local acute care competitor, provided a safe transfer facility. By explaining that an alternative, non-acute, non-competing health care organization existed in the community, acute care administrators were free to apply pressure on physicians to reduce the length of their patient's stay. One rehabilitation hospital in the corporation claimed that it was seen as the only neutral hospital in town. Physicians from both the "M.D." hospital and from the competing "Osteopathic" hospital worked together and at times even socialized with each other at the rehabilitation hospital.

The early transfers of patients were not without problems however. An acute care social worker responsible for organizing discharge plans for patients complained that she really could not justify her frequent calls to the rehabilitation hospital, "But, Dr._____'s philosophy is if a physician determines that a patient is appropriate for rehab, then no one should ask any questions. Therefore, I continue to place the calls requesting admission".

Particularly vocal about the early receipt of patients were members of the nursing staff. One rehabilitation nurse related the difficulty in obtaining complete medical records from the acute care hospital for the patient being transferred. In one instance, the patient was hurriedly
transferred from the acute care facility before tuberculosis lab test results were posted on the record. The patient should have been placed in an isolation room but since the suspected tuberculosis was not known by the rehabilitation staff, the patient was allowed to travel freely throughout the facility. As a result, all patients, visitors and staff who were suspected of coming in contact with the patient at the rehabilitation hospital had to be tested for the disease.

Therapists at the rehabilitation hospitals also frequently complained that patients were just too ill to benefit from the intense rehabilitation protocols. Many of the patients just could not tolerate the level of therapy that the therapists were ready to provide. As a result some therapists resigned their positions in the rehabilitation hospital. At exit interviews, they stated that the work did not provide the type of professional challenge they were expecting to find at a rehabilitation facility.

The federal peer review organizations (PROs) and other pre-admission screening mechanisms were, for the most part, ineffective in preventing inappropriate admissions. One therapist related that she had been asked to help write her region's PRO guidelines. In reading the regulations, she found one of the federal rules didn't seem proper to her. So, she just eliminated that rule from her region's PRO interpretation manual. In another setting, a local utilization review coordinator described how facilities could avoid receiving admission denials, "Just have a doctor call the PRO. The girl who answers the phone will back down if she knows a case is important enough to have a doctor call". To the
corporation, PROs were nuisances whose practices varied so significantly from region to region that little uniform education or guidance could be given to local hospitals in how to effectively deal with these federal "watch dogs".

**Dominance**

Hannan and Freeman (1984:149) write that while mature organizations respond slowly to threats as well as to opportunities, "The selection processes tend to favor organizations whose structures are difficult to change. That is, ... high levels of structural inertia in organizational populations can be explained as an outcome of an ecological-evolutionary process".

The population of acute care organizations in the United States did not initially embrace the expansion of inpatient medical rehabilitation. As has been shown, during the initial turmoil created by the new prospective payment system, powerful physician coalitions favored the status quo and medical rehabilitation was a poorly understood option for administrators to even consider. However, it appears that this original position may be changing. The new inpatient medical rehabilitation organizations, largely brought about through the efforts of entrepreneurs, were a rapid response to the prospective payment crisis, but acute care administrators are now beginning to question just what are the costs of allowing these new organizations to be loosely coupled to their acute care hospitals.

The tenuous nature of many relationships is observable. For example, both acute care and inpatient medical rehabilitation
organizations are frequently found recruiting staff from the same pool of available applicants. Professional search firms quickly point out to acute care hospitals that for certain categories of rehabilitation staff, where shortages are common, a large department attracts more applicants than a small department. Since the corporation's rehabilitation facilities often have the largest concentration of physical therapists, occupational therapists and rehabilitation nurses in a multi-county area, the competition between acute and rehabilitation facilities to fill staff vacancies is at times intense.

In regards to medical staff relations, physicians who serve on the staffs of both acute care and medical rehabilitation hospitals can be found shifting their loyalties and support between the organizations. For example, corporate administrators found that each month, local doctors would selectively decide, which particular hospital's committee meetings they would attend. Committee meetings are required by bylaws of the organization and by accrediting commissions. Therefore, decisions not to attend meetings could result in a hospital not having the needed quorum to conduct necessary business. Competing for the available time of physicians can become a regular source of conflict between acute care and medical rehabilitation organizations.

Of concern also to the acute care administrator is the fear that the community's support for health care institutions will become too diffuse. A cause for this concern can be observed by examining newspaper "Letters to the Editor" columns. Suddenly, letters normally just praising the emergency care or surgical care given at the acute care facility, will also
equally praise the extended and perhaps continuing personal care provided at the medical rehabilitation organization. The prestige of the acute care facility is shared and to some is perceived as eroding. The consequences of this situation are troubling. Voluntary contributions to the acute care hospital may diminish. The corporation's rehabilitation hospitals reported gaining a growing number of volunteers and also reported receiving gifts from former patients. One administrator even reported that a local nonprofit foundation wanted to support the activities of the rehabilitation hospital. The foundation was so interested that it encouraged the for-profit facility to establish a nonprofit subsidiary so that their charitable donations could be processed.

Also affecting the acute care organization, is the concern voiced by consumer advocates and government officials as to reports of patients being discharged too early from acute care hospitals. By prematurely sending patients home or to alternative organizations, acute care hospitals increase their profits under the new prospective payment system, but are accused of abandoning their patients. Threats by payers to impose sanctions and to delay reimbursement decisions have encouraged acute care hospitals to review their discharge planning policies and to reassess their organization's relationships with other organizations.

Additionally, state legislation can force the organizations to become important to each other. For example, in Pennsylvania, acute care administrators recently learned that the provision of medical rehabilitation must be assured before a hospital's emergency department can be designated a state trauma center. Other states are expected to
enact legislation similar to this new Pennsylvania law.

These daily reminders and mounting concerns have led acute care organizations toward expanding their own domain to include medical rehabilitation. The expansion of the acute care domain was facilitated recently by action taken by the Joint Commission on Accreditation of Hospitals (JCAH). Revisions of the 1986 JCAH Standards Manual have halted some of the previous debate within acute care hospitals as to how an inpatient medical rehabilitation unit should be organized. Since this voluntary organization surveys most acute care hospitals, an authoritative and uniform set of guidelines is now available to answer many of the internal issues. Although standards for medical rehabilitation have for years been available through the Commission on Accreditation of Rehabilitation Facilities, it is the authority of the JCAH, already widely established within general hospitals, that has become for the present the basic reference in the acute care industry.

Finally, acute care hospitals have received messages from the federal government of yet another possible major change in reimbursement policies which could significantly alter relations between acute care and medical rehabilitation organizations. Officials at the Health Care Financing Administration (HCFA) have announced that it is the department's intention to implement a financing plan based on capitation methodology. That is, a system where payment is based on the number of patient's enrolled in a designated plan or in a geographic region rather than a system based on the number of treatments provided patients or based on payments by diagnosis (Chershov and Traska, 1987).
The exact financing model has not yet been determined. Since the recently enacted "prospective payment plan" had brought about such upheaval in the industry, acute care providers are cognizant of the need to consider contingency courses of action in case the capitated plan is adopted.

The acute care organizations realize that a comprehensive capitated system could be defined as including post acute care services like medical rehabilitation, and believe that in the future, to successfully bid against other acute care organizations for capitation contracts, they must also control medical rehabilitation. In Health Care Strategic Management, Weil (1986:9) warns,

"Freestanding hospitals and other health care facilities without appropriate carefully designed linkages will be left to the mercy of the third party payers .... The number of available health dollars for a region and the incentives inherent in the reimbursement methodology may well be the most critical element in how, at what quantity, and where or by whom health care services will be delivered to the residents of our communities."

Recently in reporting to Congress, the Department of Health and Human Services (HHS) has recommended that "given the complexity of designing unique payment systems for rehabilitation facilities, every effort should be made to move toward the broader Medicare reform objective of capitation. Under capitation both acute and rehabilitation care would become part of a larger payment package" (National Association of Rehabilitation Facilities, October, 1986:2).
Acute care organizations are becoming dominant in delivering inpatient medical rehabilitation because there is now a greater consensus as to the necessity of controlling the linkage between acute care and inpatient medical rehabilitation.

Since the majority of patients admitted to the corporation's hospitals come directly from acute care facilities, there is a growing concern that several of the new entrepreneurial inpatient medical rehabilitation organizations will not survive because they have failed to establish stable relationships with local acute care hospitals. Contingencies such as converting medical rehabilitation beds to other types of care are being considered by corporate executives. Due to the new aggressiveness of acute care organizations to enter the medical rehabilitation market, the concern of corporate executives appears well founded.

In this chapter, data suggest that the turmoil created by the prospective payment system provided opportunities for businessmen with entrepreneurial skills to rapidly expand the number of organizations providing medical rehabilitation. The unknown economic impact of the prospective payment system on physician and hospital services, coupled with the lack of agreement among health care professionals as to how to define medical rehabilitation, allowed the entrepreneur to take advantage of this period in history. By garnering financial support often from opportunistic physicians, entrepreneurs were able to quickly assemble specialized staffs and claim their expertise in the emerging field.
With the rapid expansion of medical rehabilitation, a variety of organizational models have come about. This study suggests that some models may be more efficient in producing quality results. This study also suggests that further changes in the organization of medical rehabilitation should be expected. In particular, acute care hospitals which had not expanded services to include medical rehabilitation are now moving aggressively into this market and soon, the acute care industry may grow to become the controlling force in determining the future of medical rehabilitation.
CHAPTER V
CHANGE AND INTERPROFESSIONAL RELATIONS

As medical rehabilitation evolved, health care occupations became more differentiated, and an integration of professional efforts was needed to deliver care to the disabled. During World War II, the interdisciplinary "rehab team" became the common model of organizing medical rehabilitation, and this model is still preferred today.

The rehab team is usually comprised of at least eight professional members: the physician, rehabilitation nurse, physical therapist, occupational therapist, social worker, psychologist and speech-language pathologist (Commission on Accreditation of Rehabilitation Facilities, 1987). At times several others may also join the team. This diverse set of health professionals complement each other's efforts by working toward common objectives, goals that have been set jointly with the disabled patient. But, Rubin and Beckhard (1972:332) in an insightful discussion of the internal dynamics involved when individuals attempt to function as a group in the delivery of health care, have cautioned that it is "naive to bring together a highly diverse group of people and to expect that, by calling them a team they will in fact behave as a team".

For the specialized divisions of labor in medical rehabilitation to
effectively work together, it is necessary to understand where one profession's right to autonomously decide treatment starts and where its autonomy ends. Repeatedly, evident in discussions of effective team functioning are concerns about the boundaries which outline each of the professional domains. Nagl (1975:80) notes, clarification requires, "(1) specificity of roles; (2) specialization and minimal overlap; (3) complementary of roles in working toward a collective goal; (4) shared understanding and acceptance of role definition by members of the team", but he also adds that establishing professional domains is complicated by "potential economic and other status consequences associated with roles which lie at the heart of the interprofessional struggle". One team member often seen participating in these conflicts is the physician, the "captain of the team".

**The Frail Captain**

To rehabilitationists, the function of medicine is not just to cure, but, in a much broader sense, is to restore a patient to optimal functioning within the community. To accomplish their mission, they ask that a continuum of health care services be available not only the acute care hospital but a variety of other community organizations to enable the rehabilitation physician to carry out treatment plans. In reality however, significant service gaps exist in many communities and where comprehensive resources are available, the interdependent community organizations are not perceived to be equally important. Clearly, none of the community organizations have come close to the success of the acute
The influence of the acute care industry in establishing financial coverage for services has been significant. Most private health insurance as well as federal programs are aimed at treating acute medical needs, and payments for extended health care such as medical rehabilitation services have largely been ignored in insurance plans. However, the acute care hospital has not always held such a prominent position among community organizations. Starr (1982) writes that in the United States, it was not until the end of the nineteenth century that the demands of an industrializing, capitalist society transformed the hospital from a charity to a necessary part of medical practice. However, once this occurred, the acute care hospital became a strategic basis of power for physicians.

Historically, acute care physicians have not embraced the need for and significance of rehabilitation. Physicians who specialized in rehabilitative care were often considered marginal practitioners. In fact, before World War I, the problems of disabled patients generally were not even considered medical problems. Since most disabled patients could not afford to pay for care in the existing fee for service market, they were excluded from the physician's obligation.

During World War I, changes occurred, and the market for medical rehabilitation service expanded. Sanctioned by the federal government to treat veterans, the state became a de facto, financial supporter of the rehabilitation movement. However, a comprehensive concept of medical rehabilitation, an entity under the control of physicians was not to be. Promoted by military physicians, post war plans would have included
training and placement in addition to medical service, but these ideas conflicted with the views of the civilian bureaucrats. This civilian and military dispute caused vocational rehabilitation and medical rehabilitation to be arbitrarily split into separate organizational and financial entities, and they remain separate even today.

During World War II, medical rehabilitation again experienced an evolutionary surge. The wartime emergency significantly increased the number of physicians and their assistants working in rehabilitation. By the end of the war, a medical rehabilitation labor force had evolved and physicians were secure as "captains of the rehab team".

Yet, the physician who specialized in rehabilitation, or physiotherapist, which is what the specialty physician was called had not improved his ranking among his peers, the other physician specialists. Often physicians who became physiotherapists were not granted admission privileges at acute care hospitals. They were allowed only to consult on patients when requested by other specialists or attending physicians. At times, the physiotherapist's activity was restricted to exclusively electrodiagnostic consultations. In some locations, these post World War II consultation restrictions continued to exist in acute care hospitals.

Today, the physiotherapist, later changed in name to physiatrist, has still not achieved a secure place within organized medicine. The physiatrist has not gained the exclusive right to control medical rehabilitation. Gritzer and Arluke (1985:124) explain, "For the most part, physiatrists assumed a defensive posture in the marketplace over the last thirty years (1950-1980) and failed to develop a market approach that
might have prevented their displacement in the division of labor, if not their possible demise in the future as a medical specialty.

In the early days of the corporation, there was an ongoing debate as to whether the medical directorships at all corporate facilities should be held by only physiatrists. The proponents of this policy felt that the corporation could achieve a marketing advantage by being able to state that all facilities were directed by this physician specialty. Opponents were concerned about placing this constraint into local negotiations. As the corporation grew and expanded into various sections of the country, it became clear to corporate officers that in a number of communities, other physicians just would not tolerate a physiatrist serving as medical director. Therefore, today, the list of the corporation's medical directors includes a variety of physician specialties.

Interestingly, however, medical residency programs are now reporting that more medical students wish to enter physical medicine and rehabilitation training programs (Keen, 1986). Residency chairpersons relate that the numbers as well as the quality of the applicants are improving. But, why should an increasing number of medical students be vying to enroll in a medical specialty which has historically suffered a lack of prestige? Four environmental factors appear to be influencing their decisions.

First, medical rehabilitation is believed to be an obvious port of entry for elder patients seeking medical care. The aging population is increasingly demanding more medical care, and few of the elite medical specialties have organized a body of knowledge to meet the unique needs
of this expected legion of patients. Second, as a result of the federal government's decision to implement a prospective payment model of reimbursement, there has been a significant reduction in the number of acute care beds in the United States (American Hospital Association, 1983-1985). Ergo, a reduction in the number of opportunities for physicians to generate income. Third, with the projected surplus of physicians in the United States, students graduating from medical schools are seeking a specialty which does not appear overly populated with their competing peers. Fourth, the rapid growth in the number of medical rehabilitation organizations, has caused a shortage of available physiatrists to serve some communities. Previously, many of these communities had not recruited for physiatrists and are now beginning to offer attractive financial enticements. At times, corporate administrators found that local physicians became upset as to the size of the guaranteed salaries being offered as recruitment enticements to the young, new physiatrists. In some communities guarantees were not perceived as fair by noninstitution-based physicians who also were practicing in the area.

In addition to medical students, a growing interest in medical rehabilitation is seen from established physicians. Family practitioners, internists, orthopedic surgeons, neurologists, etc., who once held the physiatrist in low esteem now have started laying claim to the mantle rehabilitation physician. How does this self-designation occur, and why do these other specialists want to be called rehabilitation physicians? Currently both major accrediting commissions allow physicians who are
not physiatrists to manage inpatient medical rehabilitation programs:

"19.2.6.1 Rehabilitation medicine services, performed by a physiatrist or other physician qualified by training, experience, and knowledge provide for the identification of the nature and extent of functional disability and for the performance of diagnostic examinations to detect or confirm pathologic states that underlie, complicate, or exist concurrently with physical impairment and disabling conditions" (Joint Commission on Accreditation of Hospitals, 1986:228).

"111.A.11.a The physician responsible for the person's rehabilitation program should be a physiatrist or an equally qualified physician by virtue of training and experience; this should be reflected in the privileges granted by the institution" (Commission on Accreditation of Rehabilitation Facilities, 1987:45).

By allowing local interpretations of these broad definitions, privileges to enter the boundaries of inpatient medical rehabilitation have been extend to tangentially related medical specialties. If physicians are allowed to continue managing the institutional care of patients beyond the acute care phase and are permitted to charge for that continued service, definite economic incentives are created. Since medical staff rules vary considerably, these rather nonspecific accreditation requirements for rehabilitation physicians, tend to serve the financial objectives of many nonphysiatrists very well. The discretionary involvement by a large variety of medical specialists in our medical rehabilitation organizations, has also encouraged increased political infighting among physicians. As will be seen later, the lack of solidarity among physicians, in part,
explains the increasing aggressive behaviors displayed by several non-physician occupations which also practice in medical rehabilitation organizations.

The Politics of Disharmony

In modern medical rehabilitation organizations three dyadic political relationships can be observed among non-physiatrists participants, physiatrists participants and non-physicians participants. Both the non-physiatrist and physiatrist are medical doctors. The non-physician is a broad classification and includes professional staff such as nurses, therapists, social workers, psychologists, etc..

The Non-Physiatrist/Physiatrist Dyad

Non-physiatrists, join in cooperative arrangements with physiatrists often to save time. The degree of the physiatrist's involvement is negotiated. The physiatrist is in a dependent position and must constantly be striving to please the referring non-physiatrist. Even though the physiatrist may believe the non-physiatrist knows little about the concepts of rehabilitation, the physiatrist must tailor the patient's treatment plan to satisfy the non-physiatrist's expectations or decrees.

Deciding when to discharge a patient from the rehabilitation hospital is an example of this type of dilemma experienced by the physiatrist. Several times it was observed that the physiatrist met with the patient and, in concert with the rehabilitation team, organized additional days of hospitalization for the patient. The staff knew of the
plan, and the patient's family was also aware of the extended treatment. However, when the attending physician arrived at night to make rounds, he would inform the patient that further hospitalization was not necessary and that the patient should arrange to go home the next day. The attending physician would then proceed to write the discharge orders in the patient's chart without conferring with the patient's physiatrist.

The physiatrist's involvement in the case may be total or may be significantly constrained. The physiatrist may be expected to represent the non-physiatrist at team meetings, family conferences, utilization review meetings or at various other internal and external inquiries. The physiatrist may be expected to answer the daily questions from nursing and other team members as well as be expected to take evening calls. In conflicts, the physiatrist will be expected to defend the decisions of the non-physiatrist over the wishes of the interdisciplinary team. One non-physiatrist openly explained that he didn't want the team meeting held without his man (the physiatrist) present to control the situation so that nothing would get out of hand.

In this dyad, the physiatrist also must guard that the therapeutic relationship developed with the patient does not lead to the eventual exclusion of the non-physiatrist. This is particularly true in regard to planning post-hospital care. Non-physiatrists will not tolerate a peer relationship with a doctor who "steals" their patients. In practice, patients actually may be denied the choice of selecting the physiatrist for their follow-up care. The physiatrist understands that by seeing a patient after hospital discharge, the number of future referrals from the
non-physiatrist may decrease or cease altogether.

One particular physician had a series of steps that could be taken to "punish" an overzealous physiatrist. First, the offending physiatrist would see a decrease in referrals, or he would be sent indigent patients rather than the desirable commercially insured patients. Second, the physiatrist would learn that the non-physiatrist was speaking to other referring physicians about the physiatrist's questionable judgment. This type of discussion usually occurred in the acute care hospital's physicians' dining room. Third, the non-physiatrist would begin speaking to non-physicians at the rehabilitation hospital about his lack of confidence in the physiatrist, and would complain that as a result of the physiatrist's past actions, many of his patients were displeased with their rehabilitative care, so he probably would be sending over fewer patients in the future.

To successfully mollify the non-physiatrist, the physiatrist or one of his associates would have to go over to the non-physiatrist's office and tell him that in the future, the physiatrist would be more sensitive to the desires of the non-physiatrist and request that referrals again be sent to the hospital. Usually this kowtowing worked.

Finally, in this type of relationship, both physicians are forced to be cautious in how they bill for their services. Payers of medical rehabilitation challenge physician billing arrangements, and at times have not understood why two physicians were needed on a case. They have accused physiatrists and non-physiatrists of unnecessary "double billing". In New Jersey, Prudential Life Insurance initially informed inpatient
rehabilitation units that it would only pay for one physician visit per week. Later a negotiated limit for physician visits was agreed on (National Association of Rehabilitation Facilities, 1985).

In the corporation's hospitals, billing occasionally became an issue between physicians. One internist shared with a local administrator the letter that he had sent to the hospital's physiatrist. It listed his reasons for deciding not to send future referrals to the physiatrist. He wrote,

"These complaints of excessive and/or unusual charges made by a physician whom I have asked to see the patient in consultation create several types of conflict:

1. They cause me to have to get involved in time consuming tasks of refereeing disputes between patients and physicians.
2. They undermine the credibility that I have with my patients when I try to convey to them the fact that I am giving them the best care available without having them incur tremendous costs.
3. Patients resent having to pay excessive fees for medical care over and above what their insurance allows, especially when they are not sure what that care is doing for them; they take their disgruntlement out on me and I lose patients.
4. When I wish to re-hospitalize them (at the rehabilitation hospital) they balk at the suggestion making it that much more difficult for me to care for them. In regards to this last matter, I have had two patients in the last month refuse to be hospitalized again (at the rehabilitation hospital) because of the charges made to them by the physiatrists.

As a consultant you are asked to give an opinion and outline suggestions for further management. Continuing and daily visits are not necessary. In these days of cost containment such activities are harmful to the practice of medicine in general."
The Physiatrist/Non-Physician Dyad

The second dyadic relationship occurs between the physiatrist and the non-physician. In this arrangement, the physiatrist is often considered the defender of the team and serves as a buffer between the team and the non-physiatrist who has admitted the patient. When the team or one of its non-physician members needs an order changed, a discharge date extended or permission for a patient confrontation, the physiatrist is given the task of "selling" the idea to the non-physiatrist. The team believes that one physician talking to another physician is the most effective way of accomplishing their collectively-developed rehabilitation plan.

In this dyad, the physiatrist is the team's leader. However, problems arise. Many non-physicians resent having to go through a middleman who does not have the same professional training as they have. They are convinced that it is inappropriate for their special knowledge to be reinterpreted by a physiatrist and relayed to a non-physiatrist or anyone else for that matter.

When observing team meetings, it is apparent that while the ideal of the team may suggest a collegial integration of special skills, it does not necessarily mean an equality of participant status. Resentment from members subserviant to the physiatrist is common. Physiatrists were seldom confronted directly in the meetings, but resentment was manifested by participants consistently arriving late or leaving early, purposely withholding information or engaging in distractive behaviors. Following team meetings, the physiatrist's foibles would be enumerated by
cliques over coffee.

In the corporation, a number of the new facilities had hired young, recently graduated physiatrists as medical directors. Due to their inexperience, these physiatrists posed even further problems for their organizations. During a visit to one of these facilities, the medical director informed a corporate visitor that he planned to go on vacation shortly. The visitor asked the medical director if he was aware that the hospital was scheduled to be surveyed by the Joint Commission on Accreditation at the same time that he had scheduled his vacation. The young physician replied, "Yes, why? Do you think it's important for me to be here?" Since payers of rehabilitation services expect JCAH approval, a successful accreditation survey outcome was critical for the hospital's financial future. If the medical director was not present during the first JCAH visit, there would be no one to present the medical information sought by the physician on the survey team. The visiting corporate representative was aghast at the thought and informed the local hospital administrator.

**The Non-Physiatrist/Non-Physician Dyad**

This growing number of dyadic relationships includes the non-physiatrist and the non-physician and excludes the physiatrist. In this situation, the non-physiatrist wants to assure that his financial relationship with his patient, which began in the acute care setting, will continue on through the post acute care period. Since, non-physiatrists normally spend more time in the acute care setting than in the medical
rehabilitation setting, they often lack knowledge of rehabilitation concepts and lack the areas of competence of the non-physician rehabilitation specialists. The non-physicians are required, therefore, to continually remind the non-physiatrist of the differences between the medical rehabilitation organization and the acute care organization.

Numerous examples of "educating" non-physiatrists were observed in the corporation's rehabilitation organizations. Many included nurses who were often on the front line when non-physiatrists would complain. One example that continued to reoccur involved a non-physiatrist who made random unscheduled visits to the hospital in the evenings. He expected that patients should be in their rooms and that nurses should be available with charts in hand to accompany him while making rounds. The evening nurse would have to explain that a patient was not available because he or she was off the unit testing ambulation skills or away from the hospital engaged in a social activity. Furthermore, if the doctor would call ahead the next time, the patients could arrange their schedules to be available for the doctor's visit. The physician was not accustomed to being worked into a patient's schedule and found the nurses suggestion outrageous!

The roles of team members were also not always clear to non-physiatrists. For example, in the rehabilitation hospital, the occupational therapist is a significant participant. Non-physiatrists usually had some concept of physical therapy, but the role of the occupational therapist often escaped them. This was blatantly clear at one medical staff executive committee meeting. Suggested treatment
protocols had been developed and were being voted on by the officers of the medical staff. The president of the medical staff, a non-physiatrist, stared blankly during the discussion about mandating referrals of all Stroke patients to occupational therapy. He finally exclaimed that he was not for this intrusion into the practice of physicians, and besides, he could not think of a thing that an occupational therapist could do for a Stroke patient. For anyone familiar with the comprehensive management of Stroke rehabilitation, such a remark would seem unbelievable! Since it came from the president of the rehabilitation hospital's medical staff, none of the other physicians challenged the statement and the administrator had to struggle with providing the education needed.

Due to this continual need to reiterate the concepts of rehabilitation to non-physiatrists, not all non-physicians like this dyadic relationship. Yet, because in this relationship, non-physicians are generally given more opportunities to personally communicate their own concerns and contributions, a growing number of non-physicians are looking favorably at excluding the physiatrist from the team. One physical therapy director confided that she had asked a number of orthopedic surgeons to provide educational sessions for her staff, not because she believed that the staff would gain significant new insights into surgical procedures, but because she did not like the growing intrusion of the hospital's physiatrist into physical therapy practice. She had decided to develop a new coalition of support for her department.

To supporters of this political dyad, the role of the physiatrist is largely non-medical and has become, in fact, primarily managerial in
practice. They insist that the physiatrist has been left with a variety of non-medical tasks such as coordinating team activities, conducting group meetings, mediating political issues and conducting public relations and other marketing activities. The non-physiatrist/non-physician alliance has concluded that while the collective intelligence of an interdisciplinary team must be allowed to function, it is not necessary for a physiatrist to be seen as the "captain".

The Rise of the Non-Physician

Starr (1982) maintains that through the combined effects of legitimation and dependency, physicians in the United States were able to attain a great degree of social authority. In achieving the social authority to control the health care enterprise, physicians primarily sold services to individual patients rather than organizations. Numerous analysts now report, however, that power and profits in delivering health care have grown so great, that the profession's control of the market is in jeopardy. Arnold Relman, editor of the New England Journal of Medicine, forecasts that "The medical profession is not going to be the dominating, autonomous, self-regulating profession it was a few decades ago.....A new consensus is in the making" (Clark, 1989:86).

Seeking greater social recognition in this new era are the non-physician health care professions. The non-physician professions represented on the medical rehabilitation team have steadily upgraded educational standards and have extended their educational preparation. Some of the professions such as nursing have provided additional specialty
certification for members of the profession seeking special credentials for practice in rehabilitation organizations. Notably, the physical therapy profession, has been particularly aggressive in attaining control of its educational accreditation process, a process that previously had been under the control of the American Medical Association. And they are determined not to again become subordinate to medicine. "APTA is not capitulating its hard won independence over control of educational standards and its responsibility to provide peer review for the education of physical therapists" (American Physical Therapy Association, 1982). According to Gitzer and Arluke (1985:134-135), APTA's action had broad implications,

"To many in the allied health field, APTA's termination of its collaboration with the AMA signified a break in the AMA's long history of dominance over allied health occupations. Physical therapists had now laid a foundation that would allow them to depose physiatrists as the controlling occupation in the rehabilitation division of labor."

The allied health professions are increasingly pressuring state legislatures for new licensure laws to protect their practices from the control of others. Recent gains by various state occupational therapy associations are examples of this political activity. Between 1975 and 1985, twenty jurisdictions enacted licensure laws for occupational therapy personnel (American Occupational Therapy Association). Also, with the recent legislative action taken in Idaho, physical therapists are now allowed to treat patients without physician referral in thirteen
Moreover, recent federal regulations have increased the financial dependency of medical rehabilitation organizations on the non-physician professions (National Association of Rehabilitation Facilities, 1985). With rules specifying such process details as minimal hours of therapy, frequency of team meetings and essential multiple-member participation, the demand for non-physicians has risen dramatically. Ironically, while a surplus of physicians is expected in the United States, a shortage of non-physician specialists is also predicted (Bureau of Health Professions, 1984). Already at state and national conferences for allied health professions, professional recruiters line the booths at exhibition halls hoping to sign-up the rehabilitation specialists. Large bonuses, reimbursed relocation expenses and paid Caribbean vacations are used to woo the much sought after professionals.

Also, buyers of health care are expecting to have a stronger voice in deciding the extent of medical rehabilitation needed for their clients. Many insurance companies now hire individuals to serve as their representatives on rehab teams. These employees are the insurance companies' financial case managers and reducing the uncertainty of the medical rehabilitation process is a major goal for these individuals. They recognize that a growing number of individuals will be needing medical rehabilitative care, but they have no way of predicting the outcome of the process or determining the value of what they are purchasing. Unlike acute care, in medical rehabilitation, the medical diagnosis of the patient is not a good predictor of resource consumption. However, it is
hypothesized that by knowing the functional level of patients when they are admitted to inpatient medical rehabilitation organizations, predictions of cost may be possible. Since functional assessment is largely a non-physician activity, some believe that in the future, the non-physician controlled information will be greatly valued, and non-physicians will serve as the nexus between buyers and medical rehabilitation organizations. To many observers of medical rehabilitation, this recognition is overdue. In private, one corporate executive gave his opinion, "Except for legal reasons in most cases, you don't even need physicians in medical rehabilitation".

Data are needed which will determine the extent to which functional assessment information is useful. The corporate data collected on Stroke patients suggest that variation in resource consumption indeed may be partially explained by using functional assessment. If the corporate organizations are ordered according to the average functional level of their admitted patients, three groups can be compared: High Admission FIM, Mid Admission FIM, and Low Admission FIM. Each category contains seven organizations and includes patients whose ages average between 70.2 years and 71.1 years. The Low Admission FIM category with an average admission FIM of 33.3 has an average FIM gain of 14.2, and has the largest gain of the three categories. Of interest also are the efficiency ratios. There is little difference among the LOS efficiency scores for each category with Low being .41, Mid .45 and High at .37. However, the charge efficiency is higher for the Mid Admission category; .82 compared to .65 for the Low Admission category and .64 for the High Admission category.
(Table 15). Calculations for this table are found in Appendix M.

Caution should be taken in generalizing these findings. However, it is reasonable to assume that on the average, higher FIM gains will be observed when patients enter rehabilitation facilities with lower levels of functioning than when patients enter at higher levels of functioning. Of interest in this analysis is the difference in average cost for care provided to patients in the three categories. In particular, the difference between Low and Mid Admission categories is considerable. The average charge per case in the Low Admission category was $23,825.21 compared to the Mid Admission category of $15,403.04. This is a 55% difference in charges. However, the level of functioning at discharge for the two categories of patients is much closer; 47.6 for the Low Admission category compared to 48.4 for the Mid Admission category.

Therefore, it could be hypothesized that the most efficacious medical rehabilitation will be provided when patients who exhibit certain predetermined levels of functioning are admitted to facilities. If patients are admitted with levels of functioning not within the predetermined ranges, their admissions may still be appropriate, but less efficient care should be expected. Moreover, it could be suggested that providing care to less functional patients requires the consumption of more resources than does care provided to the patients admitted with higher levels of functioning. Unfortunately, data are not available to test these hypotheses.

In this chapter, data indicate that participants of the interdisciplinary rehabilitation process are struggling for legitimacy. The
Table 15
ORGANIZATIONS COMPARED BY ADMISSION FIM SCORES

<table>
<thead>
<tr>
<th></th>
<th>LOW ADMISSION</th>
<th>MID ADMISSION</th>
<th>HIGH ADMISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=7</td>
<td>N=7</td>
<td>N=7</td>
</tr>
<tr>
<td>AVE. AGE</td>
<td>70.2</td>
<td>71.1</td>
<td>70.4</td>
</tr>
<tr>
<td>AVE. ADMISSION FIM</td>
<td>33.3</td>
<td>36.0</td>
<td>40.5</td>
</tr>
<tr>
<td>AVE. D/C FIM</td>
<td>47.6</td>
<td>48.4</td>
<td>51.4</td>
</tr>
<tr>
<td>AVE. LENGTH OF STAY (DAYS)</td>
<td>35.7</td>
<td>28.0</td>
<td>30.8</td>
</tr>
<tr>
<td>AVE. CHARGE PER CASE</td>
<td>$23,825.21</td>
<td>$15,403.04</td>
<td>$17,165.91</td>
</tr>
<tr>
<td>AVE. FIM GAIN</td>
<td>14.2</td>
<td>12.4</td>
<td>.10</td>
</tr>
<tr>
<td>LOS EFFICIENCY</td>
<td>.41</td>
<td>.45</td>
<td>.37</td>
</tr>
<tr>
<td>CHARGE EFFICIENCY</td>
<td>.65</td>
<td>.82</td>
<td>.64</td>
</tr>
</tbody>
</table>
physiatrist, often labeled the "captain of the team", has failed to acquire respect among his peers and has not gained control of the medical rehabilitation market. Also, non-physicians are seeking a greater share of the rewards inherent in delivering a valued service. Furthermore, buyers of health care are looking for ways to reduce the uncertainty found in the medical rehabilitation process and are seeking to better understand their growing financial investment in this industry. This study suggests that in the future, a uniform functional assessment of patients will provide to buyers information for predicting the cost of rehabilitation. Consequently, those controlling this information, the non-physicians, may increase their status on the team and their influence with payers.
In this final chapter I summarize the study on inpatient medical rehabilitation, discuss the findings and offer some conclusions. Limitations of the research methodology are considered, and topics for further study are suggested.

Summary

Studies on medical rehabilitation organizations have examined characteristics of single organizations. This dissertation is unique because a set of inpatient medical rehabilitation organizations, a multiple hospital corporation, was studied. It was assumed that by focusing on a set of organizations, dynamics would be captured that would not be discernable by studying separate non-related individual medical rehabilitation organizations. Data were gathered as a participant observer supplemented by quantitative data. It was believed that in an emerging field like medical rehabilitation, this approach could be useful in generating hypotheses.

In addition to assembling qualitative field observations, for three months, between January 1987 and March 1987, quantitative data was
collected at twenty-one, for-profit medical rehabilitation organizations within the corporation. The Uniform Data Set for Medical Rehabilitation was the common instrument used to collect this quantitative information on over nineteen hundred patients. Another set of data on the careers of patients in a number of for-profit medical rehabilitation facilities was obtained from the Department of Rehabilitation Medicine at the State University of New York at Buffalo and used in analysis. Two outcome variables were examined: quality of care and efficiency of providing the care. In addition, these two variables were also considered when looking at data from nonprofit organizations. Results of the nonprofit organizations were then compared with the for-profit organizations.

An obvious weakness of the study is the noncomparability of samples. As a result, certain adjustments were made to available quantitative data so that the samples would reflect similar clinical impairments, similar levels of patient disability, and various other demographic variables. Another potential weakness of the quantitative data stems from reporting results by clinicians. It is possible that definitions of terms could be misinterpreted by some of the many clinicians who used the assessment instrument throughout the corporation. However, the instrument chosen for this study had been previously tested for reliability and its interrater agreement was acceptably high.

This dissertation interpreted change in medical rehabilitation organizations by specifically addressing three areas of concern:
...the relationships of ownership of facilities, whether for-profit or nonprofit organizations, to indicators of quality and efficiency of care provided;

...the relationships of certain attributes of organizations of medical rehabilitation, namely size, maturity, sources of payment and location on the quality and efficiency of services they provide;

...the influence of change in the organization of medical rehabilitation on interprofessional relations.

The chapter, The Influence of Ownership, explored the relationship of ownership to the outcomes of medical rehabilitation. Results at nonprofit organizations were compared with results at for-profit organizations. When similar samples of patients' results were examined, no applicable difference in functional gains was found between these two types of organizations. However, differences were found in the costs associated with providing care in these two types of organizations. From the data examined, the for-profit organizations charged more than the non-profit organizations; however, the use of charges in comparing organizations is wrought with problems. Charges are set by an organization and may or may not be based directly on the actual costs associated with providing the rehabilitative care. In developing charges, medical rehabilitation hospitals are allowed to recover their "reasonable costs".
This vague phrase often permits considerable leeway in setting and interpreting rates. Also, in a multiple hospital system, the charges collected at one hospital may, in fact, be subsidizing some of the costs of providing service at another facility. This subsidization is particularly true in regard to hiring specialized personnel. One facility may have the resources to hire an excellent clinician, but in addition to local work, the clinician will be utilized as a “free” consultant at several other corporate-owned facilities. Thus, an organization’s charges depend on both the local market interpretation of “reasonable costs” and also the goals of the organization. More information on the process of establishing charges would be necessary before using this indicator to compare organizations. Understandably, in a competitive industry, specific figures on such costs are extremely difficult to obtain.

A more often accepted indicator of cost uses the average length of stay calculation, but using the average length of stay to arrive at organizational efficiency is also problematic. For example, the discharge of a patient may be delayed if adequate post discharge arrangements cannot be readily made; a family may not be ready to accept a returning disabled member, a nursing home may not have an empty bed, or a patient may lack the financial resources to manage post hospital expenses. These conditions and others can cause the length of a patient’s stay to increase. However, it is generally agreed that the average length of stay is the most reliable indicator of efficiency currently available in the industry. When using this variable to compare organizations by ownership, this study suggests that there is similarity in efficiency between the two types,
for-profit and nonprofit.

The data in this chapter provide no basis for suggesting that ownership has any influence on the efficiency or the quality of care at inpatient medical rehabilitation organizations. However, the for-profit data did indicate that certain payers of care, particularly commercial insurance, may be charged more than other payers when receiving similar services. Data were not available for comparisons with nonprofit organizations.

Since inpatient medical rehabilitation is provided at a variety of locations within the health care delivery system, do the quality and efficiency of care also vary? This concern is addressed in the chapter, Organizational Attributes and Indicators of Quality and Efficiency. In the field, it has been assumed that the older, mature medical rehabilitation hospitals provided the better care. Their advertisements and their messages throughout the provider network have stressed the quality and comprehensiveness of their organized programs. However, data in this study suggest that newer, recently organized medical rehabilitation organizations are also providing as good or perhaps better rehabilitative care for certain types of patients needing rehabilitation. For example, an important category of patients admitted to medical rehabilitation facilities are those patients who have suffered Strokes. This impairment category represented the largest number of patients in the sample data. When results of Stroke patients are examined, the new rehabilitation organizations report higher average gains in patient functioning and also shorter average lengths of stay than Stroke patients admitted to older...
Furthermore, in looking at another variable, it appears that the size of the organization may affect the outcome of care for certain categories of patients. Again, when using data on Stroke patients, the smaller rehabilitation units composed of 15-25 beds which are part of acute care hospitals reported that their patients achieved higher average levels of functional independence than patients admitted to the larger medical rehabilitation organizations, and the results were produced in less time.

These findings will be encouraging to the acute care hospitals which in greater numbers are now expanding their domains to include inpatient medical rehabilitation. In the past, acute care organizations were reluctant to enter the medical rehabilitation market. However, now, due to economic pressure from the payers of health care services, acute care hospitals are developing stronger linkages with post acute care organizations like medical rehabilitation organizations.

These findings, however, may not be as encouraging to the newer independent entrepreneurial medical rehabilitation organizations which have so far flourished. Many of these new organizations have tenuous exchange relationships with the acute care hospitals in their communities. The results in this chapter suggest that for some categories of patients, more efficacious care may be provided at rehabilitation services in acute care locations.

If the power balance in the symbiotic exchange shifts in favor of traditional acute care providers of health care services, the survival of new entrepreneurial organizations may be in jeopardy, and these
entrepreneurial organizations may need to consider several options. First, the new organizations can decrease their emphasis on inpatient medical rehabilitation by expanding outpatient services or by forming relationships with non-acute organizations such as nursing homes or day care programs. Many of these alternative organizations have components of comprehensive medical rehabilitation but have not organized rehabilitation teams. Since recent changes in federal reimbursement regulations are making it more profitable to organize multidisciplinary care in non-acute settings, this may be an area for entrepreneurial energy. A second alternative is to broaden the geographic area from which patients are admitted. Some rehabilitation organizations have developed sophisticated marketing plans which draw admissions from multiple referral sources. Third, entrepreneurial organizations can create an entirely new product which will again attract the cooperation of the acute care organization. Specialized care to patients who are dependent on ventilators is an example. Another is extended clinical management of the comatose patient. Solutions which address the needs of these two populations of patients have not been widely implemented, and it can be argued that the emphasis in caring for these populations is not medical treatment but is better conceptualized as reducing limitations and providing services to deal with unique impairments. Fourth, the entrepreneurial organizations can unite to collectively influence actions which will be favorable to themselves. Regionally sharing expert talent such as reimbursement specialists or rehab engineers are ways to spread the costs of these specialized personnel and perhaps is a tactic to become
more efficient and competitive. Joint efforts to influence legislation which would favor profit making organizations versus nonprofit organizations are also examples of this fourth option.

The chapter, Change and Interprofessional Relations, discusses the tensions found among the professional providers of inpatient rehabilitative care. The data suggest that the increasing amount of money being generated through inpatient medical rehabilitation organizations is causing medical specialties, other than physiatry, to lay claim to the title rehabilitation physician, and that this increased popularity of medical rehabilitation among physicians appears to be causing conflicts. Since few organizations have incorporated rigorous credentialing requirements for rehabilitation physicians, the physiatrists have found it difficult to restrict other specialists from entering what they believe to be their domains. Because the acute care market is shrinking, even more physicians are expected to challenge the physiatrist's sovereignty in the future.

It is feasible that a variety of physician specialties in addition to the physiatrist will eventually emerge as legitimate rehabilitation physicians. Internists, family practitioners, neurologists, orthopedic surgeons, etc., could receive additional training in rehabilitative medicine and become certified. This certification mechanism would be similar to the solution being considered by several groups to improve the delivery of geriatric medicine in the United States. Geriatric medicine also crosses existing medical specialty boundaries. This solution would open the growing medical rehabilitation market to existing practitioners and would
also provide a mechanism for setting standards of practice for the numerous non-physiatrists already engaged in medical rehabilitation practice. If various physician specialists could learn the principles of rehabilitation, local governing boards could more closely guard the structure of practice in their organizations by insisting that medical rehabilitation certification is necessary before privileges are granted.

In addition to the disunity among physicians wanting to practice medical rehabilitation, is the growing dissatisfaction being expressed by non-physicians to their subservient roles in the industry. By increasing and controlling their education, and by attaining monopolistic practice rights, non-physicians are demanding deference on the rehabilitation team. The lack of solidarity among physicians is allowing this assertive non-physician behavior to grow unabated. In fact, due to feuds between physiatrists and other physicians, non-physicians are often given the opportunity to nurture a physician ally who will support the political positions of the non-physician. Recent, federal laws have also reinforced the non-physician's claim to an improved status. By defining the medical rehabilitation process so that participation of specific non-physicians is essential before organizations can receive payments, the government has, through regulation, increased the demand for non-physicians, and thus, improved the non-physician's bargaining position.

However, the greatest hope of non-physicians to change their status may be their potential role in predicting resource consumption for patients admitted to medical rehabilitation hospitals. As has been
hypothesized by others, the results of this research suggest that the functional assessment of patients may indeed predict the efficacy of care. That is, there may be ranges of functioning, that if exhibited by a patient on admission, will allow payers of care to forecast the cost of rehabilitative treatment. Thus, the admission level of functioning may provide important information in reducing the uncertainty of resource consumption and determining whether a patient should be admitted at a certain point in time. If this is true, then the role of the non-physician becomes critical as a link, a financial actuary, between the organization and the patient's payer of services. If the skills of a non-physician can be used to reduce the uncertainty of the cost of inpatient medical rehabilitation, then the non-physician's position within the ranks of health professionals will increase substantially.

**Theoretical Implications**

Of the many conceptual and theoretical implications of this study, the following are particularly important:

From the perspective of institutional dominance and ecological influences on organizations, the study clearly demonstrates the dominance of economic institutions over those of health care. It also shows that forms of payment as an aspect of the environment exert considerable influence on organizational structure and behavior. There has been a shift from retrospective payment which allowed hospitals to charge costs they incurred to prospective payment oriented toward cost containment. These prospective payment rates are based on averages calculated for
"diagnostic related groups" (DRGs) which empirically show similar levels of resource utilization i.e. costs. Prospective payment regulations have had profound effects on acute care hospitals such as lowering occupancy rates, speeding up discharges, and shifting the balance of power between the clinical and administrative hierarchy. Another important effect of cost containment is the stress on hospitals and programs which are exempt from the cost containment regulations. This exemption includes rehabilitation services. Many acute care hospitals are developing such services as a way to maintain or increase their revenues, and also to compensate for the drop in occupancy rates.

The findings of this dissertation also show the influence of economic factors on interprofessional relations. As rehabilitation services became relatively better off in resources—because of exemption from prospective payment—the central medical specialty in these services (physical medicine) became the target of challenge and competition. The challenge comes from other medical specialties which once accorded physical medicine lower ranking, as well as non-physicians in allied health professions. Both challenges are attempting to make a case directly to payers of health care costs; the case being one of importance of their roles and relative contributions to rehabilitation services.

Ownership of hospitals and profit motives have been the subject of much debate especially in view of the spread of for-profit corporate ownership of hospitals and health care facilities. On the one hand, there are contentions that the business model and profit orientation are
unsuited to the delivery of health and human services. On the other hand, there are claims that profit orientations would only increase efficiency without adversely affecting the quality of care. An important finding in this research is that the type of ownership does not influence the outcome of medical rehabilitation in the organizations included in this study. This finding offers two possible hypotheses for further exploration. One is that the professional norms of the clinical staff negate the influence of the profit motive of organizations and protect the quality of services. The other hypothesis is that both "nonprofit" and "for-profit" organizations are equally oriented toward maximizing economic return. While data are not available to test the validity and strength of these two hypotheses, it is important to point out that the for-profit corporation tended to claim somewhat higher charges especially to commercial insurance companies.

Methodological Implications

1. This study discusses interrelated and interdependent parts of the medical rehabilitation industry. To conduct this type of research, a combination of qualitative and quantitative techniques were used. Due to the researcher's employment in the industry, the perspective of a participant observer is stressed. The findings of this dissertation should be helpful to future researchers in employing these methodological approaches.

2. The dissertation focuses on the properties of entire organizations rather than the characteristics of individual members of the organization. This unit of analysis provides information unique to the
whole organization and contributes information by which organizations could be compared with each other.

3. Quality and efficiency are identified as important organizational goals. However, it is not clear what the other goals of medical rehabilitation organizations may be or to what extent these other goals may conflict with efforts to improve quality and efficiency. The study suggests that the concept of goal may be useful in measuring performance in medical rehabilitation and that its usefulness will be enhanced by further elaboration.

4. The terms quality and efficiency are multidimensional concepts and are open to varying interpretations. This work defines these terms one way. However, other interpretations are also possible. For example, some critics point out that because different purposes are pursued by various individuals in the complex medical rehabilitation organization, it is meaningless of study aggregate calculations such as average patient gains in functioning. They would suggest that more attention be given to measuring the daily process of carrying out medical rehabilitation and the cost of stress within the organization. The findings of this dissertation demonstrate the utility of these concepts and the ways they are operationalized.

5. This research also demonstrates the utility of the Uniform Data Set impairment categories in classifying patients.

6. Obtaining the cooperation from twenty-one organizations to use a common instrument and uniformly report their finding in a timely fashion is a challenge for the researcher. In this study, compliance was
achieved through frequent personal interaction with members of each organization. Personal visits to facilities, telephone calls and supportive memoranda were important in establishing trust and gaining the cooperation of local organizational members.

Applicable Implications

1. This study indicates that the Uniform Data Set is a collection instrument that can be implemented uniformly within a number of facilities. The implementation of one instrument throughout the industry has been desired by those who believe a patient’s functional status should be considered in developing a prospective payment system for medical rehabilitation. However, criticism about the precision of the UDS four point scale is widespread within the organizations studied in this research. Clinicians desire more intervals in the scale so that more sensitive measurement can be recorded of a patient’s progress during hospitalization.

2. Findings of this study suggest that more charges are given to certain types of payers when receiving similar services. Specifically, commercially insured patients were charged more than other payer categories. Why this differentiation in charges occurs and how widespread is the phenomena are issues of interest to payers of care.

3. According to this study, the belief held by some that medical rehabilitation should only be provided in a setting separate from the acute care environment appears to be myth. For certain impairments, smaller (15-25 beds) medical rehabilitation units located in acute care hospitals
appear to provide better quality and efficiency results than do larger organizations which are not part of acute care hospitals.

4. This dissertation supports past research which has held that quality of health care in for-profit organizations is comparable to care provided in nonprofit settings. In this study, no difference was found between the quality of medical rehabilitation in for-profit organizations and the quality found in nonprofit medical rehabilitation organizations.

5. This study has shown that the role of the physiatrist is not uniformly accepted by other health care professions. Thus, organizations which are developing medical rehabilitation services should assess local professional attitudes before organizing the medical component of the rehabilitation team.

Suggestions for Future Research

1. In general, very little systematic research has been explored about inpatient medical rehabilitation organizations, and certainly no such studies have been conducted to define and delineate the elements of the medical rehabilitation system as a whole. When one begins to examine inpatient medical rehabilitation services, it becomes clear that various degrees of intensity and of comprehensiveness exist throughout the country. Recognition of the need for inpatient medical rehabilitation varies considerably among communities. Inpatient medical rehabilitation services are provided in acute care organizations, independent specialty organizations, long term care organizations, and at home. Furthermore, the growth of outpatient medical rehabilitation, which is being fueled by
the concern for controlling all health care costs, also appears to be influencing inpatient referral and admission decisions. Future studies are needed to clarify and to establish the boundaries of inpatient medical rehabilitation.

2. This study gathered information on twenty-one inpatient organizations which were parts of one multiple hospital corporation. The large hospital corporation, both for-profit and nonprofit, is becoming more prevalent in our communities. More research is needed to understand the advantages and disadvantages to hospitals belonging to the collective corporation and to understand the influence of the large corporation on local decision making and patient care.

3. The financing of medical rehabilitation involves a variety of public and private sources. This dissertation has primarily explored the impact of changing federal financing policies on inpatient rehabilitative care, but more research is needed to understand the influences of other payment sources such as workman's compensation programs, commercial insurance plans, health maintenance organizations, etc., on the delivery of medical rehabilitation.

4. If the long term benefits to society are to be measured in economic terms, then more research is needed on the consequences of providing inpatient medical rehabilitation. Research is needed to measure and assess the effectiveness of this growing financial investment. Are patients who have participated in medical rehabilitation programs expected to add value to our society, or, at least, lessen their burden on society's resources? Is improving the quality of life for patients who
have been disabled a satisfactory benefit to the cost of providing medical rehabilitation? Since society does not have an unlimited amount of resources, these policy issues will need to be addressed as the cost of medical rehabilitation grows.

5. In this study, gains in patient functioning that occurred during hospitalization were recorded. If the purpose of medical rehabilitation is to restore patients to new roles in which they function at optimal capacity, then the outcome of medical rehabilitation should be measured at some point in time after discharge. What happens to patients after discharge should be the focus of future research. Which patients go home, go to long term care facilities, resume employment, etc., and moreover, do certain types of organizations bring about different post discharge results?

6. If medical rehabilitation requires a team of participants from a variety of specialized occupations, then attention should be given to understanding the interprofessional dynamics involved in organizing the delivery of care. Two issues raised in this paper particularly address this recommendation. First, governmental regulators have recently become more prescriptive in telling providers which professions are needed to provide medical rehabilitation, and, in some cases, they have also determined the minimal amount of professional time that is required. These regulatory demands have been made without the support of research and are extremely controversial among the variety of professionals on the medical rehabilitation team. The government has, in effect, established that some professions are more important than other professions.
Secondly, more physician specialists desire to follow their acute care patients into medical rehabilitation organizations and expect to control the process in the way that they do in the acute care setting. Thus, there is a growing concern in the field that an increase in physicians who have not been trained in rehabilitation will also bring about changes in the process of care. There is a concern that a medical model of care may soon encroach on the more holistic social model of rehabilitation. Understandably, research which can help our understanding of the relationships among the professional providers of care will be helpful in understanding our future inpatient medical rehabilitation organizations.

7. This work has alluded to the need to study the role of the physician as manager of the patient's rehabilitation program(s). It has been observed that while physicians are normally acquainted with the responsibility of monitoring medical problems, they are not always comfortable in managing the psycho-social and vocational factors required in comprehensive rehabilitation. As a result, in some organizations, non-medical problems are often neglected, and those professionals whose contribution to the team centers on the non-medical aspects are relegated to second class status in the organization. However, in rehabilitation non-medical issues may be paramount to the recovering patient and his/her family as they are struggling to deal with their adjusting roles.

Medical rehabilitation organizations are experimenting with proposed solutions to improving this situation. Some are providing to physicians guidelines and lists of tasks and are monitoring their adherence. Some have created new coordinator positions where
non-physician case managers serve as advocates and agents to admitted patients. Research is needed on assessing the effectiveness of these and other solutions.

8. In our largely private system of providing health care in the United States, equal access by all patients to services remains a problem and is often at the center of debates as to the government's role in health care delivery. In medical rehabilitation, it is clear that organizations aggressively seek to admit patients who have commercial insurance. However, the extent that uninsured patients are prevented from receiving rehabilitative care is not known. As medical rehabilitation becomes more widely available throughout the nation, information relevant to the differential delivery of medical rehabilitation care to patients will be important.

9. The data collected for this dissertation is current and reflects the delivery of medical rehabilitation during a period in which retrospective cost reimbursement methodology is still used by federal payers. As has been mentioned, it is probable that further changes will be made in the financing of health care services. If, in the future, a prospective payment system replaces the current retrospective system, the conclusions reached in comparing quality and efficiency between nonprofit and for-profit organizations may no longer hold and should be reassessed.

10. In this case study, the sample size and available data did not permit analysis of several important demographic variables which could impact the findings. In future studies, it will be useful for researchers in
sampling the population of organizations to take into account geographic, socioeconomic and labor market differences.

Ultimately, society will determine the value to be placed on inpatient medical rehabilitation. This dissertation has shown that attitudes about medical rehabilitation have changed over the years and are, in fact, undergoing significant reassessment now. The single most influential force fueling the engine of change is the economic environment in which medical rehabilitation organizations operate. Because we do not have a consensus on the boundaries of medical rehabilitation, there will continue to be conflicts associated with these changes. If we are to understand the meaning of these changes and arrive at specific norms for the industry, much more research will be needed.
APPENDIX A

DEFINITIONS AND CRITERIA FOR EXCLUSION FOR REHABILITATION HOSPITALS AND UNITS

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Rehabilitation Hospitals

1. Definition, Criteria and Role of Rehabilitation Hospitals

The final definition issued January 3, 1984, as amended by the August 31, 1984 regulations, defines a rehabilitation hospital as follows:

"Rehabilitation Hospitals" - A rehabilitation hospital must:

(i) Have in effect an agreement, under Part 489 of this chapter, to participate as a hospital;

(ii) Except as provided in paragraph (d), of this section, have treated during its most recent 12 month cost reporting period, an inpatient population of whom at least 75 percent required intensive rehabilitative services for the treatment of one or more of the following conditions:

A) Stroke;
B) Spinal cord injury;
C) Congenital deformity;
D) Amputation;
E) Major multiple trauma;
F) Fracture of femur (hip fracture);
G) Brain injury;
H) Polyarthritis, including rheumatoid arthritis;
I) neurological disorders, including multiple sclerosis; motor neuron disease, polyneuropathy, muscular dystrophy and Parkinson's disease; and
J) Burns

(iii) Have in effect a pre-admission screening procedure under which each prospective patient's condition and medical history are reviewed to determine whether the patient is likely to benefit significantly from an intensive inpatient hospital program or assessment;
(iv) Ensure that the patients receive close medical supervision and furnish through the use of qualified personnel, rehabilitation nursing, physical therapy, and occupational therapy plus, as needed, speech therapy, social services or psychological services and orthotic and prosthetic services;

(v) Have a director of rehabilitation who:

(A) provides services to hospital and its inpatients on a full-time basis;

(B) is a doctor of medicine or osteopathy;

(C) is licensed under State law to practice medicine or surgery; and

(vi) Have a plan of treatment for each inpatient that is established, reviewed and revised as needed by a physician in consultation with other professional personnel who provide services to the patient;

(vii) Use a coordinated multi-disciplinary team approach in the rehabilitation of each inpatient, as documented by periodic clinical entries made in the patient’s medical record to note the patient’s status in relationship to goal attainment, and that team conferences are held at least every two weeks to determine the appropriateness of treatment...” 42 CFR 405.471 (c) (2). Effective April 29, 1985, 42 CFR 412.23 (b).
Rehabilitation Units

1. Definition, Criteria and Hospital Role

The regulations issued on September 1, 1983, January 3, and August 31, 1984 also set forth the definition and criteria that a distinct part rehabilitation unit must meet in order to be excluded from the Medicare PPS system. A unit must meet two sets of criteria. These are general criteria applicable to rehabilitation units and are adapted from the earlier requirement for entities seeking a separate subprovider number and special criteria specifically for rehabilitation units.

The general criteria a unit must meet are:

(A) Be part of an institution that has a Medicare provider agreement to participate as a hospital;

(B) Have written admission criteria that are applied uniformly to both Medicare and non-Medicare patients;

(C) Have admission and discharge records that are separately identified from those of the hospital in which it is located and readily available. (However, the medical records of unit patients need not be physically separate form the records of patients in the acute care part of the hospital to the excluded unit, or vice versa. The record need only indicate, for Medicare purposes, the dates of the admission and discharge for patients of the unit. Transmittal 319, Medicare Provider Reimbursement Manual, Part 1, February, 1985)

(D) Have policies specifying that necessary clinical information is transferred to the unit when a patient of the hospital is transferred to the unit;

(E) Meet applicable State licensure laws;

(F) Have utilization review standards applicable for the type of care offered in the unit;
(G) Have beds physically separate from (i.e. not commingled with) the hospital's other beds;

(H) Be serviced by the same fiscal intermediary as the hospital;

(I) Be treated as a separate cost center for cost finding and apportionment purposes;

(J) Use an accounting system that properly allocates costs;

(K) Maintain adequate statistical data to support the basis of allocation; and

(L) Report its costs in the hospital's cost report covering the same fiscal period and using the same method of apportionment as the hospital. 42 C.F.R. 405.471 (c) (4) (i), effective April 29, 1985, 42 C.F.R. 412.25.

The special criteria that a rehabilitation unit must meet are:

(A) Except as provided in paragraph (e) of this section, have treated during its most recent 12-month cost reporting period an inpatient population of whom at least 75 percent required intensive rehabilitative services for the treatment of one or more of the following conditions:

(1) Stroke;
(2) Spinal cord injury;
(3) Congenital deformity;
(4) Amputation;
(5) Major multiple trauma;
(6) Fracture of femur (hip fracture);
(7) Brain injury;
(8) Polyarthritis, including rheumatoid arthritis;
(9) Neurological disorders, including multiple sclerosis, motor neuron disease, polyneuropathy, muscular dystrophy and Parkinson's disease; and
(10) Burns
(B) Have in effect a pre-admission screening procedure under which each prospective patient's condition and medical history are reviewed to determine whether the patient is likely to benefit significantly from an intensive inpatient program or assessment;

(C) Ensure that the patients receive close medical supervision and furnish, through the use of qualified personnel, rehabilitation nursing, physical therapy and occupational therapy, plus, as needed speech therapy, social services or psychological services and orthotic and prosthetic services;

(D) Have a plan of treatment for each inpatient that is established, reviewed, and revised as needed by a physician in consultation with other professional personnel who provided services to the patient;

(E) Use a coordinated multi-disciplinary team approach in the rehabilitation of each inpatient as documented by periodic clinical entries made in the patient's medical record to note the patient's status in relationship to goal attainment and the team conferences are held at least every two weeks to determine the appropriateness of treatment; and

(F) Have a director of rehabilitation who:
   (1) provides services to the unit and its inpatients for at least 20 hours per week;
   (2) is a doctor of medicine or osteopathy;
   (3) is licensed under State law to practice medicine or surgery; and
   (4) has had, after completing a one-year hospital internship, at least two years of training or experience in the medical management of inpatients requiring rehabilitation services.

42 CFR 405.471 (c) (4) (iii), - effective April 29, 1985, 42 CFR 412.29.

APPENDIX B

INPATIENT CODING SHEETS
UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION

IMPATIENT CODING SHEET

13. Living Arrangement
   a. Setting
      ADMISSION DISCHARGE FOLLOWUP
      01-Home 02-Board and Care
      03-Transitional Living 04-Intermediate Care
      05-Skilled Nursing 06-Acute Unit-your own facility
      07-Acute Unit-another facility 08-Chronic Hospital
      09-Rehab Facility-other 10-Other 11-Expired
   b. Living With
      ADMISSION DISCHARGE FOLLOWUP
      1- Alone 2-Family/Relatives
      3-Friends 4-Attendant 5-Other

14. Vocational Status
   a. Category
      ADMISSION FOLLOWUP
      1-Employed 2-Sheltered 3-Student
      4-Homemaker 5-Unemployed
      6-Retired-age 7-Retired-disability.
   b. Effort
      ADMISSION FOLLOWUP
      1-Full 2-Part 3-Adjusted
      time time workload

15. Followup
   a. Date
      month day year
   b. Information Source
      1-Patient 2-Family 3-Other
   c. Method
      1-In person 2-Telephone 3-Mail
   d. Health Maintenance
      1-Own Care 2-Unpaid Helper
      3-Paid Attendant 4-Paid Professional
   e. Therapy
      1-None 2-Outpatient Therapy
      3-Home Based Paid Therapy 4-Both
**UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION**

**INPATIENT CODING SHEET**

### 22. Functional Independence Measure (FIM)

**NO HELPER**

<table>
<thead>
<tr>
<th>Item</th>
<th>4.0 Complete Independence (Timely, Safely)</th>
<th>5.0 Modified Independence (Device)</th>
<th>NO HELPER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Feeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Grooming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Bathing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Dressing—Upper Body</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Dressing—Lower Body</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Toileting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sphincter Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Bladder Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Bowel Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfers:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Bed, Chair, W/Chair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Toilet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Tub, Shower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Walk/wheel Chair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Stairs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. Comprehension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Expression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Cognition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. Social Interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. Problem Solving</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>R. Memory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Check 4- or 7-level scale**

### 16. Impairment Group

**WHAT IS IMPAIRMENT GROUP Coding?**

- Complete on admission
- See Impairment Group Code at bottom of page

#### 16. Impairment Group

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Stroke</td>
</tr>
<tr>
<td>02</td>
<td>Brain Dysfunction</td>
</tr>
<tr>
<td>03</td>
<td>Non-Traumatic</td>
</tr>
<tr>
<td>04</td>
<td>Traumatic</td>
</tr>
<tr>
<td>05</td>
<td>Spinal Cord Dysfunction</td>
</tr>
<tr>
<td>06</td>
<td>Arthritis</td>
</tr>
<tr>
<td>07</td>
<td>Pain Syndromes</td>
</tr>
<tr>
<td>08</td>
<td>Orthopaedic Conditions</td>
</tr>
<tr>
<td>09</td>
<td>Cardiac</td>
</tr>
<tr>
<td>10</td>
<td>Pulmonary</td>
</tr>
<tr>
<td>11</td>
<td>Burns</td>
</tr>
<tr>
<td>12</td>
<td>Congenital Deformities</td>
</tr>
<tr>
<td>13</td>
<td>Other Disability</td>
</tr>
<tr>
<td>14</td>
<td>Other</td>
</tr>
<tr>
<td>15</td>
<td>Neurologic Conditions</td>
</tr>
<tr>
<td>16</td>
<td>Other Combinations</td>
</tr>
<tr>
<td>17</td>
<td>Amputee</td>
</tr>
<tr>
<td>18</td>
<td>Arthritis</td>
</tr>
<tr>
<td>19</td>
<td>Rheumatoid</td>
</tr>
<tr>
<td>20</td>
<td>Osteoarthritis</td>
</tr>
<tr>
<td>21</td>
<td>Other</td>
</tr>
<tr>
<td>22</td>
<td>Pain Syndromes</td>
</tr>
<tr>
<td>23</td>
<td>Neck Pain</td>
</tr>
<tr>
<td>24</td>
<td>Back Pain</td>
</tr>
<tr>
<td>25</td>
<td>Extremity Pain</td>
</tr>
<tr>
<td>26</td>
<td>Abdominal Pain</td>
</tr>
<tr>
<td>27</td>
<td>Pelvic Pain</td>
</tr>
<tr>
<td>28</td>
<td>Fecal Pain</td>
</tr>
<tr>
<td>29</td>
<td>Headache</td>
</tr>
<tr>
<td>30</td>
<td>Other Pain</td>
</tr>
</tbody>
</table>

**IN OBTAINING IMPAIRMENT GROUP CODE:**

- 01-55 Stroke
- 56-79 Brain Dysfunction
- 80-99 Non-Traumatic
- 100-199 Traumatic
- 200-299 Spinal Cord Dysfunction
- 300-399 Arthritis
- 400-499 Pain Syndromes
- 500-599 Orthopaedic Conditions
- 600-699 Cardiac
- 700-799 Pulmonary
- 800-899 Burns
- 900-999 Congenital Deformities
- 000-099 Other Disability
- 100-199 Neurologic Conditions
- 200-299 Other Combinations

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**UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION**

**COPY FREE**
APPENDIX C

GUIDE FOR USE OF THE UNIFORM DATA SET
FOR MEDICAL REHABILITATION
EXHIBIT A

GUIDE

FOR USE OF THE

UNIFORM DATA SET

FOR MEDICAL REHABILITATION

PREPARED BY THE TASK FORCE FOR DEVELOPMENT

OF A UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION

PROJECT OFFICE

DEPARTMENT OF REHABILITATION MEDICINE

BUFFALO GENERAL HOSPITAL, 100 HIGH STREET

BUFFALO, NEW YORK 14203 - (716) 845-1645

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Project Director

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Principal Investigator

Frances S. Sherwin, M.A.
Project Coordinator

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COPY FREELY
The development of a uniform data system for medical rehabilitation was initiated to meet a long-standing need to document severity of patient disability and the outcomes of medical rehabilitation. Previously there had been no uniform way to describe and communicate about disability. This effort was the outgrowth of a task force jointly sponsored by the American Congress of Rehabilitation Medicine and the American Academy of Physical Medicine and Rehabilitation and supported by a grant from the National Institute of Handicapped Research. Twelve national rehabilitation professional organizations endorsed and/or participated in this effort.

The data set is intended to be an appropriate, quickly administered, valid and reliable measure, and in addition, be discipline-free and acceptable to clinicians in the field. Data collected on key patient functional attributes (the Functional Independence Measure) in a consistent fashion allows clinicians and researchers to track patients from the initiation of hospital care through discharge and follow-up. With periodic reassessment, changes in patient performance over time can be measured and rehabilitation outcomes determined. The uniform data set is a useful tool for treatment management and monitoring, program evaluation, determination of cost effectiveness of resources used, and public policy decisions.

The development of the data system has been carried out in three phases: pilot, trial, and implementation. The purpose of the pilot was to field test the instrument to determine its face validity (clarity, completeness, appropriateness of the items, identity of unnecessary items) and ease of administration. Upon completion of the pilot in the spring 1985, modifications were made in the instrument.

The intent of the trial, completed in spring 1986, was to assess interrater reliability, validity, precision, and time to administer the data set. Data for the trial were obtained at admission, discharge, and when feasible, follow-up 6 months after discharge in 25 facilities nationwide. Two hundred fifty patients were assessed and 891 clinician assessments were performed. The clinicians were physicians (17%), occupational and physical therapists (28% each), and registered nurses (27%). Interrater reliability of the FIM was evaluated by comparing the results of multiple pairs of clinicians of differing disciplines, each pair assessing the same patient. The total score FIM intraclass correlation (ANOVA) was .86 on admission (based on 303 observer pairs) and .88 on discharge (based on 184 observer pairs). Both reflect consistent and good interrater reliability. Interobserver agreement will be increased further by revision of the instructions and a standard training procedure.
Validity was evaluated by means of specific questions regarding difficulty (88% did not have difficulty), unnecessary items (97% felt there were no unnecessary items), and items which should be added (83% felt no need for more items); and open ended comments. The average score on an evaluation item regarding adequacy of the FIM as a measure of severity of disability was 3.4 on a 5-point scale, which is in the better than average range.

Determination of the precision of the instrument; that is, how small a change is detectable from admission to discharge, revealed significant differences (10.7 ± 1.5 [standard error] FIM units) in FIM scores. Although more appropriate precision measures may be performed, this finding suggests that the FIM has adequate precision.

The time required to learn to use the FIM (41 minutes) and to administer the FIM (32 minutes) seems acceptable.

The data set and FIM have been revised based on the findings of the trial, and the implementation will begin in early fall 1986. Facilities wishing to participate will receive a GUIDE to the use of the instrument, a training package, and an IBM compatible floppy diskette suitable for inputting data on a sample of patients. Data will be forwarded to the data management service office at the State University of New York at Buffalo for entry into the data system, for analysis, and for report back to participants.

For further information contact:

Frances S. Sherwin
Uniform Data System Project Office
Buffalo General Hospital
100 High Street
Buffalo, NY 14203
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September 16, 1986
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B. How to Code Items ........................................ 5

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B. Impairment Groupings With Related ICD9 Codes

C. Blank Coding Sheets

D. Evaluation Form

E. FIM Four-Level and Seven-Level Scoring Example: Paraplegia
UNIFORM DATA SET FOR MEDICAL REHABILITATION

BACKGROUND

The Task Force to Develop a Uniform Data System for Medical Rehabilitation was established in 1983 to meet a long-standing need to document severity of patient disability and the outcomes of medical rehabilitation. Presently there is no uniform way to describe and communicate about disability. The Task Force is sponsored by the American Congress of Rehabilitation Medicine (ACRM) and American Academy of Physical Medicine and Rehabilitation (AAPM&R).

A grant* was obtained from the National Institute of Handicapped Research to develop a minimum data set that would be an appropriate, quickly and uniformly administered, valid and reliable measure, and in addition would be discipline-free and acceptable to the clinicians in the field. Data collected on key patient functional attributes in a consistent fashion will allow clinicians and researchers to track patients from the initiation of hospital care through discharge and follow-up. With periodic reassessment, changes in patient performance over time can be measured and rehabilitation outcomes determined. There are many uses for this kind of information.

The Task Force reviewed 36 published and unpublished functional assessment instruments which would be helpful in identifying items and rating scales that measure function. The challenge for the Task Force was to select the most common and useful functional assessment items and to decide on an appropriate rating scale which would permit most rehabilitation clinicians to assess severity of disability in a uniform and reliable manner.

The Functional Independence Measure (FIM) was derived for this purpose. It assesses self care, sphincter management, mobility, locomotion, communication, and social cognition on a four-level scale, expandable to seven levels.

The data set includes, in addition, items which document patient demographic characteristics, diagnoses, impairment groups, length of hospital inpatient stay, and charges.

A trial study was carried out between July 1985 and April 1986 for the purpose of testing the FIM for validity and reliability in 28 facilities across the country. The FIM was found to have face validity and to be reliable. The trial findings resulted in some modifications of this GUIDE, the data set, and definitions. This version of the GUIDE reflects those changes and is provided for your use in carrying out the Implementation Phase at your facility.

* The Uniform Data System for Medical Rehabilitation is being developed with support from the U.S. Department of Education, National Institute of Handicapped Research (NIH), grant number G088435062, and is being conducted by the State University of New York at Buffalo, School of Medicine, Department of Rehabilitation Medicine.
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American Hospital Association

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National Head Injury Foundation

Margaret Kelly-Hayes
Association of Rehabilitation Nurses

Steve White
American Speech Language Hearing Association

Ken Davis
American Physical Therapy Association

Carol Gwin
American Occupational Therapy Association

1Initiated by the American Congress of Rehabilitation Medicine and the American Academy of Physical Medicine and Rehabilitation, November 1983.

2At the September 1985 meeting, the Task Force was expanded to form an Advisory Committee that would include in addition to the members of the Task Force representatives of the endorsing organizations and the allied health organizations.

3Representatives of the American Hospital Association (AHA), the National Association of Rehabilitation Facilities (NARF), and the National Easter Seal Society began to work with the Task Force in 1984. Other sponsoring organizations were represented by liaison persons already members of the Task Force. The project was also endorsed by the Commission on Accreditation of Rehabilitation Facilities and the National Association of Rehabilitation Research and Training Centers.

4Involvement of the allied health organizations began in late 1984.
UNDERLYING PRINCIPLES FOR USE OF THE FUNCTIONAL INDEPENDENCE MEASURE (FIM)

The Functional Independence Measure is intended to include a minimum number of items. It is not expected to incorporate all the activities that would be possible to measure or that might need to be measured for clinical purposes. Rather, it is a basic indicator of severity of disability.

The FIM has been designed to be used with a four-level scale which represents major differences in independent and dependent behavior and reflects the burden of care for disability. The underlying rationale for classifying an activity as independent or dependent is whether another person, a helper, is required. As you begin to use the FIM, you will note that the intervals between the four levels are not exactly equal. Thus, a variety of human assistance subcategories are included under Levels 2 and 3. Designating these subcategories is optional and whether the subcategories are used will depend on the anticipated purposes of collecting the data. If the data obtained from the FIM are used for program evaluation, a four-level scale will be appropriate. If, on the other hand, the FIM is used for treatment planning or monitoring, the seven-level scale (using the subcategories) may be the better choice. The FIM has been designed to provide sufficient flexibility so that it can be used for both purposes. The majority of items -- feeding, grooming, bathing, dressing, toileting, mobility, transfer, locomotion, and stairs -- can be assessed effectively on a seven-level scale. There are some items, however, which cannot be assessed on a seven-level scale. These are bowel, bladder, comprehension, expression, social interaction, problem solving, and memory.

The FIM is a measure of disability, not impairment. The FIM is intended to measure what the subject actually does, whatever his or her diagnosis or impairment, not what he or she ought to be able to do, or might be able to do if certain circumstances were different. As an experienced clinician, you may be well aware that a depressed person could do many things he or she is not doing, but nevertheless the person should be assessed on the basis of what he or she actually does. Note also that there is no provision to consider an item "not applicable."

The FIM was designed to be discipline-free, that is, a measure usable by any trained clinician, regardless of discipline. However, under some circumstances, certain clinicians may find it difficult to assess some activities. If that is the case, another more appropriate clinician can participate in the FIM assessment of any one patient. If it is felt that only a speech pathologist can assess the communication items whereas a nurse is more knowledgeable with respect to bowel and bladder management and a physical therapist has the expertise to evaluate mobility, the assessment can be divided among them.

* Subject means the person with disability.
UNDERLYING PRINCIPLES FOR USE OF THE FIM (CONTINUED)

It is important to read the definitions of the items carefully before beginning to use the FIM, committing to memory what each activity includes. Rate the subject only with respect to the specific item. For example, when rating the subject with regard to bowel and bladder management, do not take into consideration whether he or she can get to the toilet. That information will be obtained when transfer is assessed. Similarly, preparation for grooming does not include getting to the washbasin.

To be classified at any given level, the subject must complete either all of the tasks included in the definition or only one of several tasks. If all must be completed, the series of tasks will be connected in the text of the definition by the word and. If only one must be completed, the series of tasks will be connected by the word or. For example grooming includes oral care, hair grooming, washing hands and face, and either shaving or applying make-up, whereas communication includes clear comprehension of either auditory or visual communication.

Implicit in all of the definitions, and stated in many of them, is a concern that the individual perform these activities with reasonable safety. The question to be asked is whether the subject is at risk of injury when performing the task. As is true of all human endeavors, your judgment should take into account that there must be a balance between the risk of an individual's participating in some activities and a corresponding, although different risk, if he or she does not.

Because the data set is still being refined, your opinions and suggestions are considered very important. We are also interested in any problems you encounter in collecting and recording data. Therefore, we have provided a separate form on which are guiding questions and space for your comments. This form, colored blue and labeled "Evaluation Questionnaire" and attached as one of the items in the appendix, enables us to evaluate the current validity of the FIM.

The FIM may be added to a facility's own data set, which may include items such as independent living skills, ability to take medications, use community transportation, direct care provided by an aide, or write or use the telephone, outdoor mobility, impairments such as blindness and deafness, and premorbid status. Many clinicians who participated in the Trial wanted to add such items. But the data set must be limited to the fundamentals of assessing disability and the rehabilitation process. We encourage individual clinicians or centers to adopt additional items for their own use, if this is appropriate.

CODING THE DATA SET

Coded specimen copies of the coding sheet are provided in Appendix A. The specimen code sheets have been completed for some hypothetical cases to help you complete your forms. PLEASE BE SURE TO RECORD DATA ON THE CODING SHEET, AND BE SURE TO COMPLETE ALL THE INFORMATION. DON'T LEAVE ANY BLANKS UNFILLED.

The completed coding sheets can form the data base for your own analysis and reporting. Or you can forward coding sheets from your patients to the project office at the address below. Before

GUIDE TO THE IMPLEMENTATION PHASE  -4-  8/29/86
CODING THE DATA SET (CONTINUED)

sending coding sheets to the project office write a letter indicating a desire to enroll in the system. A return letter will give you specific directions on how to enroll, submit data, and receive reports.

Uniform Rehabilitation Data Project
Department of Rehabilitation Medicine
Buffalo General Hospital
100 High Street
Buffalo, New York 14203
Telephone: (716) 845-1645

A. WHEN TO CODE ITEMS IN THE DATA SET

Information will be coded in the data set at at least two times: within 72 hours of patient admission to and upon discharge from inpatient rehabilitation. Follow-up information will be collected at one point at an outpatient visit, home visit, by telephone, or by mailed questionnaire three to six months after discharge, for those facilities which are able to collect it.

B. HOW TO CODE ITEMS IN THE DATA SET

Using the sample coding sheets (Appendix A) as a guide and the item-by-item coding instructions which follow, enter a number or numbers in every appropriate open (blank) box on the coding sheet. Notice that the coding sheet has two sides.

If you have difficulty with the data set see your facility Uniform Data System coordinator or call Fran Sherwin at (716) 845-1645.

CODING INSTRUCTIONS

1. Rehabilitation Facility Code - use facility identification number provided by project staff.

2. Patient Number - subject identification number (maximum nine digits). Use the medical record number, social security number, or unique number that remains consistent throughout the patient's hospitalizations.

3. Admission Date - the initial admission date to rehabilitation.

4. Discharge Date - the date of discharge from rehabilitation. If the subject is transferred off the rehabilitation service and later returns, the discharge date should be the last day spent on the rehab service. An interruption of 30 days or less will be considered the same rehabilitation hospitalization. An interruption of more than 30 days is a new hospitalization, and a new form should be completed.

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CODING THE DATA SET (CONTINUED)

5. Program Interrupted - whether the subject was transferred to another medical service during the rehabilitation program. Answer "Yes" or "No." This item is appropriate for those rehabilitation units which are part of larger acute care medical facilities and for freestanding rehabilitation facilities that transfer patients to acute care hospitals. An interruption of any period of 30 days or less will be considered the same rehabilitation hospitalization.

If yes:
1st Interruption
a. Transfer date
b. Return date

2nd Interruption
a. Transfer date
b. Return date

3rd Interruption
a. Transfer date
b. Return date

6. Admission Class - the admission classification of the subject should be coded as follows:

1 Initial Rehabilitation - first time admission to a comprehensive rehabilitation program.

2 Short-Term Evaluation - a preplanned stay for evaluation of fewer than 10 days on the rehabilitation service.

3 Readmission - any rehabilitation readmission to any rehabilitation facility.

7. Zip Code - write in nine-digit zip code, if available; otherwise five-digit code of the last home before admission.

8. Birthdate - the subject's birthdate: month/day/year.

9. Sex - code the sex of the subject as follows:

1 Male
2 Female

10. Race - code the race of the subject as follows:

1 White
2 Black
3 Asian
4 American Indian
5 Other
CODING THE DATA SET (CONTINUED)

11. English Language - does the subject understand and speak English? Do not account for aphasia here.
   1 Yes
   2 No
   3 Partial

12. Marital Status - code the subject's marital status at time of admission as follows:
   1 Single (never married)
   2 Married
   3 Widowed
   4 Separated
   5 Divorced

13. Living Arrangement
   a. Setting from which the subject was admitted or to which discharged. Code at admission, discharge, and follow-up. Code as follows:
      01 Home
      02 Board and care facility (includes a structured retirement facility)
      03 Transitional living facility
      04 Intermediate care facility
      05 Skilled nursing facility (nursing home)
      06 Acute unit of your own facility
      07 Another acute hospital
      08 Chronic hospital
      09 Another rehab facility
      10 Other
      11 Expired (deceased) - code only at discharge or follow-up

   b. Living with - the relationship of the individuals (if any) residing with the subject. If living with more than one other person, select in the order of family/relatives, friends. If 13.a. is 02-10, code 13.b. as 5., Other. Code at admission, discharge, and follow-up.
      1 Alone
      2 With Family/Relatives
      3 With Friends
      4 Attendant
      5 Other
14. Vocational Status

a. Whether the subject was employed or was a student, homemaker, or was retired prior to and following hospitalization for the disabling condition. If more than one, select in the order presented. Code at admission and follow-up.

1 Employed (competitive setting)
2 Homemaker
3 Sheltered employment
4 Student
5 Unemployed
6 Retired for age (60 yrs of age or greater)
7 Retired for disability (permanent disability, less than 60 yrs of age)

b. Amount of effort - If subject is retired, code full-time or, if applicable, part-time retirement. If unemployed, code full-time. Code at admission and follow-up.

1 Full time
2 Part time
3 Adjusted workload - workload is reduced due to disability.
CODING THE DATA SET (CONTINUED)

15. Follow-up - the date, source, and method of obtaining follow-up information, who performs health maintenance activities, and current therapy received. Code as follows:

a. Date of follow-up

b. Source of follow-up information
   1. Patient
   2. Family
   3. Other

c. Method of obtaining follow-up information
   1. In person
   2. By telephone
   3. Mailed questionnaire

d. Health maintenance - the person primarily responsible for performing routine personal care, and managing the personal environment at home or in the institution. If only one type of helper is required, code primary and secondary boxes the same. If more than one type of helper is involved, indicate which is primary and which is secondary. Code as follows:
   1. Subject him- or herself
   2. An unpaid person or family member
   3. A paid attendant or aide
   4. A paid, skilled professional such as a registered nurse

e. Therapy - the subject is currently receiving therapy which is paid for. Code as follows:
   1. None
   2. Outpatient therapy
   3. Home-based paid therapy such as P.T., O.T., Speech, Nursing (not routine personal care or maintenance)
   4. Both
CODING ITEMS IN THE DATA SET (CONTINUED)

16. Impairment Groupings - the major impairment diagnostic category of the subject. Refer to listing below of specific impairment group codes to be included in each category. Choose the appropriate two-digit code shown below first, then decimal designation for subgroup.

Note: Refer to the ICD-9 codes shown in Appendix B to help you determine the correct impairment group code.

Code as follows:

01.000 STROKE
01.100 LEFT BODY INVOLVEMENT
01.200 RIGHT BODY INVOLVEMENT
01.300 BILATERAL INVOLVEMENT
01.400 NO PARESIS

02.000 BRAIN DYSFUNCTION
02.100 NON-TRAUMATIC
02.200 TRAUMATIC
02.210 OPEN
02.220 CLOSED

03.000 NEUROLOGICAL CONDITIONS - OTHER

04.000 SPINAL CORD DYSFUNCTION
04.100 NON-TRAUMATIC
04.200 TRAUMATIC
04.1 PARAPLEGIA
04.2 QUADRIPLEGIA
04.1 INCOMPLETE
04.2 COMPLETE

05.000 AMPUTATION OF LIMB
05.100 Amputation-Single-Upper AE
05.200 " - " -Upper BE
05.300 " - " -Lower AK
05.400 " - " -Lower BK
05.500 " -Double-AK/AK
05.600 " - " -AK/BK
05.700 " - " -BK/BK
05.800 " -Other combinations

06.000 ARTHRITIS
06.100 RHEUMATOID
06.200 OSTEOARTHRITIS
06.300 OTHER
08.000 ORTHOPAEDIC CONDITIONS
09.000 CARDIAC
10.000 PULMONARY

07.000 PAIN SYNDROMES
07.100 NECK PAIN
07.200 BACK PAIN
07.300 EXTREMITY PAIN
07.400 ABDOMINAL PAIN
07.500 PELVIC PAIN
07.600 FACIAL PAIN
07.700 HEADACHE
07.800 OTHER PAIN

13.000 OTHER DISABLING IMPAIRMENTS

GUIDE TO THE IMPLEMENTATION PHASE -10-  8/29/86
17. Date of Onset - the date of onset of the impairment that was coded in Item 16 for which the subject is to be rehabilitated. Maximum of six digits. For conditions which have an insidious onset or if for any other reason the exact date of onset is not known, code as follows:
   a. if the year and month are known, but the exact day is not, use the first day of the month.
   b. if the year is known, but the exact month is not, use the first of January of that year.
   c. if the year is an approximation, use the first of January of the approximate year.

18. Principal Diagnosis - the ICD 9 Code for principal diagnosis or presenting problem for which the subject was admitted to rehabilitation that relates to items 16 and 19. Code at discharge.

19. Other Diagnoses - the relevant additional diagnoses. List ICD 9 Codes (maximum of 7) to include secondary diagnoses and other major conditions. These include medical conditions or complications during initial rehabilitation or occurring after discharge from rehabilitation. Recommend that medical record librarian provide this information. Code at discharge and follow-up.

20. Payment Source - the source of payment of the subject's medical expenses. Code the appropriate category for primary and secondary payment source. If there is no secondary source, enter code 15. Code at discharge.
   a. Primary
      01 Blue Cross
      02 Medicare
      03 Medicaid/Welfare
      04 Commercial Insurance
      05 HMO
      06 Workers' Compensation
      07 Crippled children's services
      08 Regional Centers for Developmentally Disabled
      09 State Vocational Rehabilitation
      10 Private pay
      11 Employee - courtesy
      12 Free
      13 Champus
      14 Other
   b. Secondary Code as above, or
      15 None
21. Total Charges

a. Total rehabilitation hospital charges accrued while the subject is on the rehabilitation service. Charges should be consistent with days on the rehabilitation service as coded for Items 3 & 4. If interruption of the rehabilitation inpatient program is 30 days or less, rehabilitation days and total charges should reflect the total stay on the rehabilitation service. Acute hospital days and charges during the program interruption should not be included. If the interruption is greater than 30 days, this constitutes a new (separate) admission and should be reported on a new (separate) coding sheet. Code the actual dollars charged.

b. Do these charges include physician fees? Code as follows:

1 Yes
2 No
22. Functional Independence Measure (FIM)

PROCEDURES FOR COMPLETING AND SCORING THE FUNCTIONAL INDEPENDENCE MEASURE (FIM)

Record the number which best describes the subject's level of function for every FIM item on the coding sheet. It is possible to assess subjects based upon either a four-level or seven-level scale. For the four-level scale the scores are: 4.0 - Complete Independence; 3.0 - Modified Independence; 2.0 - Modified Dependence; and 1.0 - Complete Dependence. To assess subjects on a seven-level scale, Modified Dependence is subdivided and scored as follows: 2.0 for supervision; 1.7 for minimal assistance; and 1.3 for moderate assistance. Complete Dependence is subdivided and scored as 1.0 for maximal assistance and 0.5 for total assistance.

Using either the four-level or seven-level scale is optional and depends on the purposes for collecting the data. If the data are used for program evaluation, a four-level scale is adequate. If, on the other hand, the FIM is used for treatment planning or monitoring, the seven-level scale may be preferred. Note that the subcategories (seven-level scale) may not be used to assess Sphincter Control, Communication, or Social Cognition items. The smaller box size on the coding sheet indicates four-level only items. See Appendix E for FIM Four-Level and Seven-Level Scoring Example: Paraplegia.

Each of the 18 items comprising the FIM has a maximum score of 4.0. The lowest score on each item on a four-level scale is 1.0, but on a seven-level scale it is only 0.5. The highest total score on either scale is 72. However, there will be a difference in the lowest total score depending on whether the four-level or seven-level scale is used. The lowest possible total score on a four-level scale is 18, whereas the lowest possible total score on a seven-level scale is 12.5. Therefore, it is imperative that you indicate on the code sheet in the box under "Total" at the bottom of the FIM whether you are using a four- or seven-level scale to assess a patient.

The clinicians in the field have been adamant in their conviction that a seven-level scale is crucial to showing change with sufficient sensitivity. The seven-level option makes the FIM more attractive to users and therefore more likely to be used. However, during the trial phase, the FIM was tested for interrater reliability only on a four-level scale. Therefore, the beginning of the current implementation phase will require an analysis of interrater reliability using the seven-level scale.

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GUIDE TO THE IMPLEMENTATION PHASE -13- 8/29/86
FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

DESCRIPTION OF THE LEVELS OF FUNCTION AND THEIR SCORES

INDEPENDENT—Another person is not required for the activity (NO HELPER).

4.0 COMPLETE INDEPENDENCE—All of the tasks described as making up the activity are typically performed safely without modification, assistive devices, or aids, and within reasonable time.

3.0 MODIFIED INDEPENDENCE—Activity requires any one or more than one of the following: An assistive device, more than reasonable time, or there are safety (risk) considerations.

DEPENDENT—Another person is required for either supervision or physical assistance in order for the activity to be performed, or it is not performed (REQUIRES HELPER).

2.0 MODIFIED DEPENDENCE—The subject expends half (50%) or more of the effort. The levels of assistance required are:

2.0 Supervision—subject requires no more help than cuing or coaxing, without physical contact.
1.7 Minimal assistance—subject requires no more help than touching, or subject expends 75% or more of the effort.
1.3 Moderate assistance—subject requires more help than touching, or expends half (50%) or more (up to 75%) of the effort.

1.0 COMPLETE DEPENDENCE—The subject expends less than half (less than 50%) of the effort. Maximal or total assistance is required, or the activity is not performed. The levels of assistance required are:

1.0 Maximal assistance—subject expends less than 50% of the effort, but at least 25%.
0.5 Total assistance—subject expends less than 25% of the effort.
FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

FUNCTIONAL INDEPENDENCE MEASURE (FIM) ITEMS

PERSONAL CARE ACTIVITIES

SELF CARE

A. FEEDING Includes all aspects of eating and drinking including
   opening containers, pouring liquids, cutting meat,
   buttering bread, chewing, and swallowing.

4. Complete Independence—Eats from a dish and drinks from a cup
   presented in the customary manner on a table or tray, opens
   a milk carton, pours liquids, cuts meat, and butter's bread.

3. Modified Independence—Requires prior preparation such as
   opening cartons, pouring liquid, cutting meat, or buttering
   bread before drinking or eating or requires an adaptive or
   assistive device such as a straw, spork, rocking knife,
   takes more than reasonable time, but manages meals without a
   helper during mealtime.

2. Modified Dependence—Drinks and takes full meals by mouth
   (i.e., chews and swallows), but requires supervision (e.g.,
   standby, cuing, or coaxing) and/or requires minimal or
   moderate physical assistance during the activity of drinking
   or eating. The subject does not rely on other means of
   alimentation such as parenteral or gastrostomy feedings.

1. Complete Dependence—Requires maximal or total assistance for
   feeding or does not drink or take full meals by mouth but
   must rely at least in part on other means of alimentation
   such as parenteral or gastrostomy feedings.

Example for Level 3: Another person opens milk carton and leaves
   it in refrigerator in the morning or the
   night before.

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FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

B. GROOMING Includes oral care, hair grooming, washing hands and face, and either shaving or applying make-up.

4. Complete Independence—Cleans teeth or dentures, combs or brushes hair, washes hands and face, shaves, applies make-up, including all preparations. Performs grooming activities safely in a reasonable period of time.

3. Modified Independence—As above but requires prior preparation, adaptive or assistive device, or takes more than a reasonable time.

2. Modified Dependence—Requires supervision (e.g., standby, cuing or coaxing) and/or minimal or moderate assistance during grooming activities.

1. Complete Dependence—Requires maximal or total assistance, or grooming is not performed.

C. BATHING includes bathing the body from the neck down (tub, shower, or bed bath).

4. Complete Independence—Bathes and dries the body from the neck down.

3. Modified Independence—As above but requires adaptive or assistive device, takes more than a reasonable time, or there are safety considerations.

2. Modified Dependence—Requires supervision (e.g., standby, cuing, or coaxing) and/or minimal or moderate assistance during washing and drying.

1. Complete Dependence—Requires maximal or total assistance, or bathing is not performed.
D. DRESSING - UPPER BODY

Includes dressing above the waist as well as donning and removing prosthesis or orthosis when applicable.

4. Complete Independence—Dresses and undresses including obtaining clothes from their customary places such as drawers and closets; manages bra, pull-over garment, and front-opening garment; manages zippers, buttons, and snaps; dons and removes prosthesis or orthosis when applicable.

3. Modified Independence—As above, but requires prior retrieval or arrangement of clothes before dressing, or uses special adaptive closure such as velcro, or assistive device, or takes more than a reasonable time.

2. Modified Dependence—Requires supervision (e.g., standby, cuing, or coaxing) and/or minimal or moderate assistance during dressing.

1. Complete Dependence—Requires maximal or total assistance, or dressing is not performed.

Example for Level 3: Another person lays out clothes the night before.

E. DRESSING - LOWER BODY

Includes dressing from the waist down as well as donning or removing prosthesis or orthosis when applicable.

4. Complete Independence—Dresses and undresses including obtaining clothes from their customary places, manages underpants, slacks, skirt, belt, stockings, and shoes; manages zipper, buttons, and snaps; dons and removes prosthesis or orthosis when applicable.

3. Modified Independence—As above, but requires prior retrieval or arrangement of clothes before dressing, or uses special adaptive closure such as velcro, or assistive device, or takes more than a reasonable time.

2. Modified Dependence—Requires supervision (e.g., standby, cuing or coaxing) and/or minimal or moderate assistance during dressing.

1. Complete Dependence—Requires maximal or total assistance, or dressing is not performed.
FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

F. TOILETING Includes maintaining perineal hygiene and adjusting clothing after toileting.

4. Complete Independence—Cleanses self after voiding or bowel evacuation; puts on sanitary napkins/inserts tampons; adjusts clothing after using toilet.

3. Modified Independence—As above with adaptive equipment, or takes more than a reasonable time.

2. Modified Dependence—Requires supervision (e.g., standby, cuing or coaxing) and/or minimal or moderate assistance in using toilet paper, or in perineal hygiene, or in adjusting clothes.

1. Complete Dependence—Requires maximal or total assistance.

SPHINCTER CONTROL

G. BLADDER MANAGEMENT Includes complete intentional control of urinary bladder and management of equipment necessary for emptying bladder.

4. Complete Independence—Controls bladder completely and intentionally and is never incontinent.

3. Modified Independence—Requires a catheter, urinary collecting device, or urinary diversion or uses medication for control; if catheter is used, the individual instills or irrigates catheter without assistance; cleans, sterilizes, and sets up the equipment for irrigation without assistance. If the individual uses a device, he/she assembles and applies condom drainage or an ileal appliance without assistance of another person; empties, puts on, removes, and cleans leg bag or empties and cleans ileal appliance bag. No accidents.

2. Modified Dependence—Requires supervision (e.g., standby, cuing, or coaxing) and/or minimal or moderate assistance for the individual to maintain a satisfactory voiding pattern or to maintain an external device; or because of the lapse of time to get to bed pan or the toilet the individual has occasional sphincter accidents, but not on a daily basis.

1. Complete Dependence—Requires maximum or total assistance. Despite assistance the individual is wet on a frequent or almost daily basis, necessitating wearing diapers or other absorbent pads, whether or not a catheter or ostomy device is in place.
FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

H. BOWEL MANAGEMENT Includes complete intentional control of bowel
movement and use of laxatives, suppositories, and manual evacuation.

4. Complete Independence—Controls bowels completely and
   intentionally and is never incontinent.

3. Modified Independence—Uses digital stimulation or stool
   softeners, suppositories, laxatives, or enemas on a regular
   basis if needed, or uses other medications for control. If
   the individual has a colostomy, he/she maintains it. No
   accidents. Assistance of another person is not required.

2. Modified Dependence—Requires supervision (e.g., standby,
   cuing, or coaxing) and/or minimal or moderate assistance to
   maintain a satisfactory excretion pattern by using such
   means as suppositories or enemas or to maintain an ostomy
   device; or the individual has occasional sphincter
   accidents, but not on a daily basis.

1. Complete Dependence—Requires maximal or total assistance.
   Despite assistance the individual is soiled on a frequent or
   almost daily basis, necessitating wearing diapers or other
   absorbent pads, whether or not an ostomy device is in place.

MOBILITY

I. TRANSFERS: BED, CHAIR, WHEELCHAIR Includes management of all
   aspects of transferring to and from bed, chair, or
   wheelchair, or coming to a standing position, if
   walking is the typical mode of locomotion.

4. Complete Independence—If walking, approaches, sits down, and
   gets up to a standing position from a regular chair safely;
   transfers from bed to chair.

   If in a wheelchair, approaches a bed or
   chair, locks brakes, lifts foot rests, and safely performs
   either a standing pivot or sliding transfer; returns safely,
   changing the position of the wheelchair if necessary;
   removes and replaces arm rest if necessary.

3. Modified Independence—As above but requires adaptive or
   assistive device such as a sliding board, a lift, grab bars,
   or special seat or chair or brace or crutches; takes more
   than a reasonable time to transfer or transfer is not
   performed safely. Assistance of another person is not
   required.

2. Modified Dependence—Requires supervision (e.g., standby,
   cuing, or coaxing) and/or minimal or moderate assistance for
   transfer.

1. Complete Dependence—Requires maximal or total assistance, or
   transfer is not performed.

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FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

J. TRANSFER: TOILET Includes getting on and off toilet.

4. Complete Independence--If walking, approaches, sits down on and gets up from a standard toilet safely; If in a wheelchair, approaches toilet, locks brakes, lifts foot rests, and safely performs either a standing pivot or sliding transfer; and returns safely.

3. Modified Independence--As above but requires adaptive or assistive device such as a sliding board, a lift, grab bars, or special seat, or takes more than a reasonable time to complete transfer, or transfer is not performed safely. Assistance of another person is not required.

2. Modified Dependence--Requires supervision (e.g., standby, cuing or coaxing) and/or minimal or moderate assistance for transfer.

1. Complete Dependence--Requires maximal or total assistance, or transfer is not performed.

K. TRANSFERS: TUB OR SHOWER Includes getting into and out of a tub or shower stall.

4. Complete Independence--If walking, enters and leaves a tub or shower stall safely. If in a wheelchair, approaches tub or shower, locks brakes, lifts foot rests, and safely performs either a standing pivot or sliding transfer; and returns safely.

3. Modified Independence--As above, but requires adaptive or assistive device such as grab bars, special seat, or a lift, or takes more than a reasonable time, or transfer is not performed safely. Assistance of another person is not required.

2. Modified Dependence--Requires supervision (e.g., standby, cuing, or coaxing) and/or minimal or moderate assistance for transfer.

1. Complete Dependence--Requires maximal or total assistance, or transfer is not performed.
FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

LOCOMOTION

1. WALKING OR USING WHEELCHAIR
   Includes walking once in a standing position, or using a wheelchair, once in seated position, indoors.

   4. Complete Independence—Walks a minimum of 150 feet safely without assistive devices.

   3. Modified Independence—Walks a minimum of 150 feet but uses a brace (orthosis) or prosthesis on leg, special adaptive shoes, cane, crutches, or walkerette; takes more than a reasonable time; or does not walk safely, i.e., is at risk to injury.

      If not walking, operates manual or electric wheelchair independently for a minimum of 150 feet; turns around; maneuvers the chair to a table, bed, toilet; negotiates at least a 3 percent grade; maneuvers on rugs and over door sills.

Check primary mode of locomotion. If both are about equal, check W and C. ( )W = walking ( )C = wheelchair

2. Modified Dependence—If walking, requires supervision (e.g., standby, cuing, or coaxing), minimal or moderate assistance to go as far as 150 feet, or walks independently at least 50 feet.

      If not walking, requires supervision and/or minimal or moderate assistance to go as far as 150 feet in wheelchair or operates manual or electric wheelchair independently at least 50 feet.

1. Complete Dependence—Requires maximal or total assistance to go as far as 150 feet and does not walk or operate a wheelchair as far as 50 feet independently.

M. STAIRS includes going up and down 12 to 14 stairs (one flight) indoors.

4. Complete Independence— Goes up and down at least one flight of stairs safely without any type of handrail or support.

3. Modified Independence— Goes up and down at least one flight of stairs using side support or handrail, cane, or portable supports, which are managed without assistance of another person, takes more than reasonable time, or is not safe going up and down stairs.

2. Modified Dependence— Requires supervision (e.g., standby, cuing, or coaxing) and/or minimal or moderate assistance to go up and down one flight of stairs safely.

1. Complete Dependence— Requires maximal or total assistance or does not go up and down one flight of stairs.

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FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

COMMUNICATION

N. COMPREHENSION includes clear comprehension of either auditory or visual communication.

Check the primary mode of comprehension. If both are about equal, check A and V. ( )A = auditory ( )V = visual

4. Complete independence—Follows spoken or written directions (such as three-step commands) or conversation; comprehends either spoken or written native language.

3. Modified independence—Has difficulty following spoken or written directions (such as three-step commands) or conversation. May require a hearing or visual aid, other assistive device, or extra time to comprehend the information.

2. Modified dependence—Does not follow directions or conversation without cues or assistance of another person, including an interpreter for the hearing impaired or a reader for the visually impaired.

1. Complete dependence—Does not follow spoken or written directions or conversation.

Example for level 3: a visual aid is consistent use of eyeglasses

O. EXPRESSION includes clear expression of verbal or nonverbal language.

Check the primary mode of expression. If both are about equal, check V and N. ( )V = verbal ( )N = nonverbal

4. Complete independence—Expresses complex ideas intelligibly and fluently, verbally or nonverbally, including either signing or writing.

3. Modified independence—Expresses complex ideas with mild difficulty but communicates basic needs and wants without difficulty. May require an augmentative communication device or system.

2. Modified dependence—Expresses thoughts in a telegraphic or confused pattern or requires the prompts, cues, or assistance of another person.

1. Complete dependence—Does not express basic needs and wants even with an augmentative communication device or system.
FUNCTIONAL INDEPENDENCE MEASURE (FIM) (CONTINUED)

SOCIAL COGNITION

P. SOCIAL INTERACTION Includes skills related to getting along and participating with others in therapeutic and social situations.

4. Complete Independence—Participates appropriately with staff, other patients, and family members, e.g., controls temper, accepts criticism, is aware that words and actions have an impact on others.

3. Modified Independence—Participates appropriately with staff, other patients, and family members in structured situations or modified environments. Assistance of another person is not required.

2. Modified Dependence—Unpredictable or uncooperative behavior requires assistance of another person for supervision less than half (less than 50 percent) of the time.

1. Complete Dependence—Does not function in a group/family setting or has outbursts of socially unacceptable behavior such as temper tantrums or inappropriate outbursts of laughter or crying. Requires assistance of another person for more than half (more than 50 percent) of the time.

Example for level 3: Structured situations or modified environments include rehabilitation classes, school, and workshop.

Q. PROBLEM SOLVING Includes skills related to using previously acquired knowledge to solve problems of daily living.

4. Complete Independence—In new or unfamiliar situations, applies previously acquired knowledge, initiates and carries out a sequence of steps until task is completed, and self-corrects if errors are made.

3. Modified Independence—Has some difficulty initiating, sequencing, or self-correcting. Supervision of another person is not required.

2. Modified Dependence—Problem-solves only with help of another person for supervision, coaxing, or cuing for less than half (less than 50 percent) of the time.

1. Complete Dependence—Does not problem-solve. The problem is solved by another person.

Examples: Getting food into the house either by shopping or by arranging to have the food or meals brought in or adapting to a change in hospital schedule.

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R. MEMORY Skills related to awareness in performing daily activities in an institutional or community setting.

4. Complete Independence—Recognizes people frequently encountered and remembers daily routines without cuing, prompting, or aids; executes requests of others without need for repetition.

3. Modified Independence—Has some difficulty recognizing other people, remembering daily routines and requests of others, uses self-initiated or environmental cues, prompts or aids. Reminding by another person is not required.

2. Modified Dependence—Has difficulty recognizing other people and remembering daily routines and requests of others. Requires prompting by another person less than half (less than 50 percent) of the time.

1. Complete Dependence—Does not recognize other people, remember daily routines, and requests of others. Requires supervision more than half (more than 50 percent) of the time.
Appendix A

Sample Coding Sheets and Cases

Appendix A will be mailed as an addendum to the GUIDE as soon as it becomes available. [Anticipated date is end of September 1986.]
Appendix B

IMPAIRMENT GROUPINGS WITH RELATED ICD9 CODES

01.000 STROKE
  01.100 LEFT BODY INVOLVEMENT
  01.200 RIGHT BODY INVOLVEMENT
  01.300 BILATERAL INVOLVEMENT
  01.400 NO PARESIS

Patients in this category should have a diagnosis of cerebrovascular disease as either a primary or secondary diagnosis.

ICD9 CODE

342.0  Flaccid hemiplegia
342.1  Spastic hemiplegia
342.9  Hemiplegia, unspecified
344.0  Quadriplegia (with 433.0 equals brain stem infarct or "locked in syndrome" to be coded as 01.3)
430    Subarachnoid hemorrhage
431    Intracerebral hemorrhage
432    Intracranial hemorrhage
433    Occlusion or stenosis of precerebral arteries
433.0  Basilar artery occlusion
434    Occlusion of cerebral arteries
436    Acute, but ill-defined cerebrovascular disease
438    Late effects of cerebrovascular disease

02.000 BRAIN DYSFUNCTION
  02.100 NON-TRAUMATIC BRAIN DYSFUNCTION

ICD9 CODE

191    Malignant neoplasm of brain
225.0  Benign neoplasm of brain
225.1  Benign neoplasm of cranial nerves
225.2  Benign neoplasm of cerebral meninges
323    Encephalitis
324.0  Intracranial abscess
326    Late effects of intracranial abscess or pyogenic infection
331    Other cerebral degenerations
348.1  Anoxic brain damage
997.0  Central nervous system complications
348.3  Acute encephalopathy
349.8  Toxic encephalopathy
Appendix B (continued)

IMPAIRMENT GROUPINGS WITH RELATED ICD9 CODES (CONTINUED)

02.200 TRAUMATIC BRAIN DYSFUNCTION
  02.210 OPEN
  02.220 CLOSED

ICD9 CODE

310.2 Post-traumatic encephalopathy, post-concussion syndrome
800 Skull fracture (vault)
801 Skull fracture (base)
803 Other and unqualified skull fractures
804 Multiple fractures involving skull or face with other bones
850 Concussion
851 Cerebral laceration and contusion
852 Subarachnoid, subdural, and extradural hemorrhage following subdural injury.
853 Other and unspecified intracranial hemorrhage following injury
854 Intracranial injury of other and nonspecified nature
905.0 Late effect of fracture of skull and face bones
907.0 Late effect of intracranial injury without mention of skull fracture

03.000 NEUROLOGICAL CONDITIONS

ICD9 CODE

138 Poliomyelitis, late effect
250.5 Diabetes mellitus with neurological manifestations
331 Other cerebral degeneration
332 Parkinson's disease
333 Other extrapyramidal disease and abnormal movement disorders
334 Spinocerebellar disease
335.2 Motor neuron disease
337 Disorders of the autonomic nervous system
340 Multiple sclerosis
341 Other demyelinating diseases of the central nervous system
356 Peripheral neuropathy
357 Inflammatory and toxic neuropathy includes Guillain-Barre Syndrome
358 Myoneural disorders
359 Muscular dystrophy and other myopathies
710.4 Polymyositis
Appendix B (continued)

IMPAIRMENT GROUPINGS WITH RELATED ICD9 CODES (CONTINUED)

04.000 SPINAL CORD DYSFUNCTION

Patients in this category should have a diagnosis of either paraplegia or quadriplegia and a designation of etiology.

ICD9 CODE

344.0 Quadriplegia, unspecified
344.1 Paraplegia, unspecified

04.100 NON-TRAUMATIC

04.110 PARAPLEgia

04.111 INCOMPLETE
04.112 COMPLETE

04.120 QUADRIPLEGIA

04.121 INCOMPLETE
04.122 COMPLETE

ICD9 CODE

015 Tuberculosis of bones and joints
19B.3 Secondary malignant neoplasm of spinal cord
198.4 Secondary malignant neoplasm of other parts of the nervous system (meninges, spinal)
225.3 Benign neoplasm of spinal cord
225.4 Benign neoplasm of spinal meninges
324.1 Intraspinal abscess
441 Aortic aneurysm
444 Aortic embolism and thrombosis
721 Spondylitis and allied disorders

04.200 TRAUMATIC

04.210 PARAPLEgia

04.211 INCOMPLETE
04.212 COMPLETE

04.220 QUADRIPLEGIA

04.221 INCOMPLETE
04.222 COMPLETE

ICD9 CODE

806 Fracture of vertebral column with spinal-cord injury
952 Spinal cord injury without evidence of spinal bone injury
953 Injury to nerve roots and spinal plexus

B-3
### Appendix B (continued)

**IMPAIRMENT GROUPINGS WITH RELATED ICD9 CODES (CONTINUED)**

#### 05.000 AMPUTATION OF LIMB

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>ICD9 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>05.1</td>
<td>Amputation-Single-Upper AE</td>
<td></td>
</tr>
<tr>
<td>05.2</td>
<td>&quot; - &quot; -Upper BE</td>
<td></td>
</tr>
<tr>
<td>05.3</td>
<td>&quot; - &quot; -Lower AK</td>
<td></td>
</tr>
<tr>
<td>05.4</td>
<td>&quot; - &quot; -Lower BK</td>
<td></td>
</tr>
<tr>
<td>05.5</td>
<td>&quot; -Double-AK/AK</td>
<td></td>
</tr>
<tr>
<td>05.6</td>
<td>&quot; - &quot; -AK/BK</td>
<td></td>
</tr>
<tr>
<td>05.7</td>
<td>&quot; - &quot; -BK/BK</td>
<td></td>
</tr>
<tr>
<td>05.8</td>
<td>&quot; -Other combinations</td>
<td></td>
</tr>
</tbody>
</table>

#### ICD9 CODE

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>736.9</td>
<td>Acquired deformity of limb, site unspecified</td>
</tr>
<tr>
<td>896</td>
<td>Traumatic amputation of foot</td>
</tr>
<tr>
<td>905.9</td>
<td>Late effect of traumatic amputation</td>
</tr>
</tbody>
</table>

#### 06.000 ARTHRITIS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>06.1</td>
<td>RHEUMATOID</td>
</tr>
<tr>
<td>06.2</td>
<td>OSTEOARTHRITIS</td>
</tr>
<tr>
<td>06.3</td>
<td>OTHER</td>
</tr>
</tbody>
</table>

#### ICD9 CODE

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>714</td>
<td>Rheumatoid arthritis and other inflammatory</td>
</tr>
<tr>
<td></td>
<td>polyarthropathies</td>
</tr>
<tr>
<td>715</td>
<td>Osteoarthritis and allied disorders</td>
</tr>
<tr>
<td>716</td>
<td>Other and unspecified arthropathies</td>
</tr>
<tr>
<td>720</td>
<td>Ankylosing spondylitis -- includes rheumatoid</td>
</tr>
<tr>
<td></td>
<td>arthritis of the spine</td>
</tr>
</tbody>
</table>

#### 07.000 PAIN SYNDROMES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>07.1</td>
<td>NECK PAIN</td>
</tr>
<tr>
<td>07.2</td>
<td>BACK PAIN</td>
</tr>
<tr>
<td>07.3</td>
<td>EXTREMITY PAIN</td>
</tr>
<tr>
<td>07.4</td>
<td>ABDOMINAL PAIN</td>
</tr>
<tr>
<td>07.5</td>
<td>PELVIC PAIN</td>
</tr>
<tr>
<td>07.6</td>
<td>FACIAL PAIN</td>
</tr>
<tr>
<td>07.7</td>
<td>HEADACHE</td>
</tr>
<tr>
<td>07.8</td>
<td>OTHER PAIN</td>
</tr>
</tbody>
</table>

#### ICD9 CODE

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>721</td>
<td>Spondylosis and allied disorders</td>
</tr>
<tr>
<td>722</td>
<td>Intervertebral disc disorders</td>
</tr>
<tr>
<td>723</td>
<td>Other disorders of cervical region</td>
</tr>
<tr>
<td>724</td>
<td>Other and unspecified disorders of back</td>
</tr>
<tr>
<td>846</td>
<td>Sprains and strains of sacroiliac region</td>
</tr>
<tr>
<td>847</td>
<td>Sprains and strains of other and unspecified part</td>
</tr>
<tr>
<td></td>
<td>of back</td>
</tr>
</tbody>
</table>
# Appendix B (continued)

## IMPAIRMENT GROUPINGS WITH RELATED ICD9 CODES (CONTINUED)

### 08.000 ORTHOPAEDIC DISORDERS

<table>
<thead>
<tr>
<th>ICD9 CODE</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>820</td>
<td>Fracture of neck of femur</td>
</tr>
<tr>
<td>828</td>
<td>Multiple fractures</td>
</tr>
<tr>
<td>839</td>
<td>Other ill-defined multiple dislocations</td>
</tr>
</tbody>
</table>

### 09.000 CARDIAC DISORDERS

<table>
<thead>
<tr>
<th>ICD9 CODE</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>410</td>
<td>Acute myocardial infarction</td>
</tr>
<tr>
<td>411</td>
<td>Other acute and subacute forms of ischemic heart disease</td>
</tr>
<tr>
<td>414</td>
<td>Other forms of chronic ischemic heart disease</td>
</tr>
<tr>
<td>427</td>
<td>Cardiac dysrhythmias</td>
</tr>
<tr>
<td>427.5</td>
<td>Cardiac arrest</td>
</tr>
</tbody>
</table>

### 10.000 PULMONARY DISORDERS

<table>
<thead>
<tr>
<th>ICD9 CODE</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>491</td>
<td>Chronic bronchitis</td>
</tr>
<tr>
<td>492</td>
<td>Emphysema</td>
</tr>
<tr>
<td>493</td>
<td>Asthma</td>
</tr>
<tr>
<td>496</td>
<td>Chronic airway obstruction, not elsewhere classified</td>
</tr>
<tr>
<td>786</td>
<td>Symptoms involving respiratory system and other chest symptoms</td>
</tr>
</tbody>
</table>

### 11.000 BURNS

<table>
<thead>
<tr>
<th>ICD9 CODE</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>941</td>
<td>Burns of face, head, and neck</td>
</tr>
<tr>
<td>942</td>
<td>Burn of trunk</td>
</tr>
<tr>
<td>943</td>
<td>Burn of upper limb, except wrist and hand</td>
</tr>
<tr>
<td>944</td>
<td>Burn of wrist(s) and hand(s)</td>
</tr>
<tr>
<td>945</td>
<td>Burn of lower limb(s)</td>
</tr>
<tr>
<td>946</td>
<td>Burn of multiple specified sites</td>
</tr>
<tr>
<td>948</td>
<td>Burn classified according to extent of body surface involved</td>
</tr>
</tbody>
</table>
Appendix B (continued)

IMPAIRMENT GROUPINGS WITH RELATED ICD9 CODES (CONTINUED)

12.000 CONGENITAL DEFORMITIES

ICD9 CODE

343    Infantile cerebral palsy
741    Spina bifida
742    Other congenital anomalies of nervous system
754    Certain congenital musculoskeletal deformities
756    Other congenital musculoskeletal anomalies

13.000 OTHER DIAGNOSES

All other diagnoses
### Appendix C

**UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION**

**INPATIENT CODING SHEET**

If data on this form are revised, write date here: ___/___/___ and circle new data.

<table>
<thead>
<tr>
<th>1. Rehab Facility Code</th>
<th>2. Patient Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Admission Date</td>
<td>4. Discharge Date</td>
</tr>
<tr>
<td>5. Program Interrupted</td>
<td>2nd Intermitten</td>
</tr>
<tr>
<td>a. Transfer Date</td>
<td>b. Return Date</td>
</tr>
<tr>
<td>6. Admission Class</td>
<td>7. Zip Code (Home)</td>
</tr>
<tr>
<td>8. Birthdate</td>
<td>9. Sex</td>
</tr>
<tr>
<td>10. Race</td>
<td>11. English Language</td>
</tr>
<tr>
<td>12. Marital Status</td>
<td>13. Living Arrangement</td>
</tr>
<tr>
<td></td>
<td>a. Setting</td>
</tr>
<tr>
<td></td>
<td>b. Living With</td>
</tr>
<tr>
<td></td>
<td>14. Vocational Status</td>
</tr>
<tr>
<td></td>
<td>a. Category</td>
</tr>
<tr>
<td></td>
<td>b. Effort</td>
</tr>
<tr>
<td></td>
<td>15. Followup</td>
</tr>
<tr>
<td></td>
<td>a. Date</td>
</tr>
<tr>
<td></td>
<td>b. Information Source</td>
</tr>
<tr>
<td></td>
<td>c. Method</td>
</tr>
<tr>
<td></td>
<td>d. Health Maintenance</td>
</tr>
<tr>
<td></td>
<td>e. Therapy</td>
</tr>
</tbody>
</table>

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COPY FREELY UDS CODE: 18/29/86
### Appendix C (continued)

#### UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION

#### INPATIENT CODING SHEET  SIDE 2

<table>
<thead>
<tr>
<th>16. Impairment Group</th>
<th>(complete on admission)</th>
<th>See Impairment Group Code at bottom of page</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Date of Onset</td>
<td></td>
<td>monthly day year</td>
</tr>
<tr>
<td>18. Principal Diagnosis</td>
<td>(complete on discharge)</td>
<td>ICD 9 Code</td>
</tr>
<tr>
<td>19. Other Diagnoses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Payment Source</td>
<td>a. Primary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Secondary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01-BlueCross 02-Medicare 03-Medicaid/Welfare 04-Commercial Insurance 05-HMO 06-Work Comp 07-Crippled Child Serv 08-Regional Center Devel Disab 09-State Voc Rehab 10-Private Pay 11-Employee Courtesy 12-Free 13-Champus 14-Other</td>
<td></td>
</tr>
<tr>
<td>21. Charges</td>
<td>a. Total Hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Include Physician?</td>
<td>1=Yes 2-No</td>
</tr>
</tbody>
</table>

#### Impairment Group Code:

- **01 Stroke**
- **01.1 Left Body Involvement**
- **01.2 Right Body Involvement**
- **01.3 Bilateral Involvement**
- **01.4 No Paralysis**
- **02 Brain Dysfunction**
- **02.1 Non-Traumatic**
- **02.2 Traumatic**
- **02.21 Open Injury**
- **02.22 Closed Injury**
- **Neurologic Conditions**
- **-Other**
- **UDS CODE-2 8/25/86**

#### 22. Functional Independence Measure (FIM)

<table>
<thead>
<tr>
<th>Section</th>
<th>4.0 Complete Independence (Timely, Safely)</th>
<th>NO HELPER</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 Modified Dependence</td>
<td>1.0 Complete Independence (Subject &lt; 50%)</td>
<td></td>
</tr>
<tr>
<td>3.0 Modified Independence (Device)</td>
<td>1.0 Minimal Assist (Subject &lt; 25%)</td>
<td></td>
</tr>
<tr>
<td>2.0 Supervision</td>
<td>0.5 Total Assist (Subject &lt; 10%)</td>
<td></td>
</tr>
<tr>
<td>1.3 Moderate Assist (Subject = 50%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Self Care

- A. Feeding
- B. Grooming
- C. Bathing
- D. Dressing—Upper Body
- E. Dressing—Lower Body
- F. Toileting

#### Bladder Control

- G. Bladder Management
- H. Bowel Management

#### Mobility

- Transfer:
  - I. Bed, Chair, W/Chair
  - J. Toilet
  - K. Tub, Shower

#### Locomotion

- L. Walk/Wheel Chair
- M. Stairs

#### Communication

- N. Comprehension
- O. Expression

#### Social Cognition

- P. Social Interaction
- Q. Problem Solving
- R. Memory

#### Total

*(Check 4- or 7-level scale)*

- 06 Arthritis
- 08 Orthopedic Conditions
- 06.1 Rheumatoid
- 09 Cardiac
- 06.2 Osteoarthritis
- 10 Pulmonary
- 06.3 Other
- 11 Burns
- 07 Pain Syndromes
- 12 Congenital Deformities
- 07.1 Neck Pain
- 13 Other Disabling Impairments
- 07.2 Back Pain
- COPYRIGHT 1986
- 07.3 Extremely Pain
- UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION
- 07.4 Abdominal Pain
- 07.5 Pelvic Pain
- 07.6 Extremity Pain
- 07.7 Headache
- 07.8 Other Pain
- 07.9 Other Pain

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Appendix D

UNIFORM DATA SYSTEM FOR MEDICAL REHABILITATION

Implementation Phase

Evaluation Questionnaire

To be completed by each staff person who fills out the Functional Independence Measure (data set) for a patient. Each evaluator should complete a separate evaluation form for each patient.

A. Your discipline (degree/certification): ___________________________

B. Years in clinical rehabilitation practice: _______________

C. Regarding the Functional Independence Measure, were there any items which:
   C.1. were difficult to understand?----------------------No___ Yes__
       If yes, which items? (List on back)
       Why difficult? (Comment on back)
       Suggested rewording? (Suggestions on back)
   C.2. are unnecessary?----------------------No___ Yes__
       If yes, which items? (List on back)
       Why unnecessary? (Comment on back)
   C.3. should be added?----------------------No___ Yes__
       If yes, which items? (List on back)
       Why? (Comment on back)

D. List on the back any other suggestions to improve the instrument.

E. How would you rate the segment of the Functional Independence Measure you completed as a measure of severity of disability? (Please circle one):
   1----------------2----------------3----------------4------------------5
   Poor OK Excellent

F. For the patient you have just assessed, how long did it take you:

   F.1. learn to administer the instrument (from first reading of instructions to completion of first instrument)? Do not include time to fill out this questionnaire.
       ___________ hours _________ minutes

   F.2. generate and record the data, once learned (including patient assessment/conference time)? _________ minutes

G. In the blank below, indicate the source, i.e., patient directly (PD), patient team conference (TC), or medical record (MR) from which the information to make the assessment was obtained.

8/29/86
Appendix E

FIM 4-Level and 7-Level Scoring Example: Paraplegia

<table>
<thead>
<tr>
<th>Levels</th>
<th>4.0 Complete Independence (Timely, Safely)</th>
<th>3.0 Modified Independence (Device)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO HELPER</td>
<td>HELPER</td>
</tr>
<tr>
<td></td>
<td>2.0 Modified Dependence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.0 Supervision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.7 Minimal Assist (Subject = 75%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 Moderate Assist (Subject = 50%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0 Complete Dependence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0 Maximal Assist (Subject = 25%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 Total Assist (Subject = 0%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self Care</th>
<th>4-Level</th>
<th>7-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Feeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Grooming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Bathing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Dressing—Upper Body</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Dressing—Lower Body</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Toileting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sphincter Control (subject = 75%)

<table>
<thead>
<tr>
<th>Mobility</th>
<th>4-Level</th>
<th>7-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Bed, Chair, W/Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Toilet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Tub, Shower</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Locomotion

<table>
<thead>
<tr>
<th>Locomotion</th>
<th>4-Level</th>
<th>7-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. Walk/ Wheel Chair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Stairs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Communication

<table>
<thead>
<tr>
<th>Communication</th>
<th>4-Level</th>
<th>7-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Comprehension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Expression</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Social Cognition

<table>
<thead>
<tr>
<th>Social Cognition</th>
<th>4-Level</th>
<th>7-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. Social Interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. Problem Solving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Memory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total (Check 4- or 7-level scale) →

Use tenths integer for 7-level scale but not for 4-level scale.

NOTE: You can only use 4-level scale for these items.

Total 4-Level Score = 62

Total 7-Level Score = 61.3

Checked 4-Level Scale

Checked 7-Level Scale

UDS 8/29/86
APPENDIX D

ILLUSTRATION OF TABLE 1 CALCULATIONS
AVE. ADMISSION FIM SCORE

TOTAL ADMISSION FIM POINTS FOR ALL PATIENTS IN TRIAL = 8958.64 = 39.60
TOTAL # OF PATIENTS = 226

TOTAL ADMISSION FIM POINTS FOR ALL PATIENTS IN FOR-PROFIT = 85,558.88 = 44.96
TOTAL # OF PATIENTS = 1903

AVE. FIM POINT GAIN

TOTAL FIM POINT GAIN FOR ALL PATIENTS IN TRIAL = 2095.02 = 9.27
TOTAL # OF PATIENTS = 226

TOTAL FIM POINT GAIN FOR ALL PATIENTS IN FOR-PROFIT = 17,964.32 = 9.44
TOTAL # OF PATIENTS = 1903
APPENDIX E

ILLUSTRATION OF TABLE 3 CALCULATIONS
NONPROFIT SAMPLE - 100% FIRST ADMISSION STROKE PATIENTS

AVE. ADMISSION FIM SCORE

\[
\text{TOTAL ADMISSION FIM SCORE} = 2912.7 \quad \text{TOTAL # OF PATIENTS} = 73
\]

AVE. FIM POINT GAIN

\[
\text{TOTAL FIM POINT GAIN} = 3796 \quad \text{TOTAL # OF PATIENTS} = 73
\]

FOR-PROFIT SAMPLE - 98% FIRST ADMISSION STROKE PATIENTS

AVE. ADMISSION FIM SCORE

\[
\text{TOTAL ADMISSION FIM SCORE} = 5692.5 \quad \text{TOTAL # OF PATIENTS} = 165
\]

AVE. FIM POINT GAIN

\[
\text{TOTAL FIM POINT GAIN} = 2062.5 \quad \text{TOTAL # OF PATIENTS} = 165
\]
APPENDIX F

ILLUSTRATION OF TABLE 8 CALCULATIONS
NONPROFIT SAMPLE—AGGREGATE OF SIX IMPAIRMENT CATEGORIES

AVE. ADMISSION FIM SCORE

\[
\text{TOTAL ADMISSION FIM SCORE} = \frac{4078.8}{103} = 39.6
\]

AVE. FIM POINT GAIN

\[
\text{TOTAL FIM POINT GAIN} = \frac{1194.8}{103} = 11.6
\]

FOR-PROFIT SAMPLE—AGGREGATE OF SIX IMPAIRMENT CATEGORIES

AVE. ADMISSION FIM SCORE

\[
\text{TOTAL ADMISSION FIM SCORE} = \frac{47389.2}{1173} = 40.4
\]

AVE. FIM POINT GAIN

\[
\text{TOTAL FIM POINT GAIN} = \frac{12081.9}{1173} = 10.3
\]
APPENDIX G

ILLUSTRATION OF TABLE 9 CALCULATIONS
NONPROFIT SAMPLE - STROKE PATIENTS

AVE. ADMISSION FIM SCORE

\[
\text{TOTAL ADMISSION FIM SCORE} = 2147.2 \\
\text{TOTAL # OF PATIENTS} = 61
\]

AVE. FIM POINT GAIN

\[
\text{TOTAL FIM POINT GAIN} = 750.3 \\
\text{TOTAL # OF PATIENTS} = 61
\]

FOR-PROFIT SAMPLE - STROKE PATIENTS

AVE. ADMISSION FIM SCORE

\[
\text{TOTAL ADMISSION FIM SCORE} = 5692.5 \\
\text{TOTAL # OF PATIENTS} = 165
\]

AVE. FIM POINT GAIN

\[
\text{TOTAL FIM POINT GAIN} = 2062.5 \\
\text{TOTAL # OF PATIENTS} = 165\]
APPENDIX H

ILLUSTRATION OF TABLE 10 EFFICIENCY RATIO CALCULATIONS
LENGTH OF STAY EFFICIENCY

NONPROFIT SAMPLE

AVE. FIM GAIN = 12.3
AVE. LENGTH  = 28
OF STAY

FOR-PROFIT SAMPLE

AVE. FIM GAIN = 12.5
AVE. LENGTH  = 31.4
OF STAY

CHARGE EFFICIENCY

NONPROFIT SAMPLE

AVE. FIM GAIN = 12.3
AVE. CHARGE PER  = $1458/$1000 = .84
CASE/$1000

AVE. FIM GAIN = 12.5
AVE. CHARGE PER  = $1906/$1000 = .66
CASE/$1000
APPENDIX I

SUMMARY DATA TABLE
<table>
<thead>
<tr>
<th>ORG.</th>
<th>LOCATION</th>
<th>MATURITY</th>
<th>SIZE</th>
<th>ADMISSION LEVEL</th>
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</tr>
<tr>
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</tr>
<tr>
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<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
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</tr>
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<td>1</td>
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<tr>
<td>J</td>
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<td>2</td>
<td>3</td>
</tr>
<tr>
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</tbody>
</table>

**KEY:**
- **LOCATION:** 0= INDEPENDENT HOSPITAL, 1= HOSPITAL REHAB UNIT
- **MATURITY:** 0= ORGANIZATION BEFORE 1986, 1= ORGANIZATION AFTER 1985
- **SIZE:** 1= ORGANIZATION OF 25-45 BEDS, 2= ORGANIZATION OF 60-40 BEDS, 3= ORGANIZATION OF 120-72 BEDS
- **ADMISSION LEVEL:** 1= ORGANIZATION WITH LOW FIMS, 2= ORGANIZATION WITH MID FIMS, 3= ORGANIZATION WITH HIGH FIMS
<table>
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<tr>
<th>ORG.</th>
<th>AVE. FIM GAIN</th>
<th>LOS EFFICIENCY</th>
<th>CHARGE EFFICIENCY</th>
<th>AVE. LOS STAY</th>
<th>AVE. CHARGE PER CASE</th>
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INDEPENDENT HOSPITALS

**AVERAGE FIM GAIN**

\[
\text{AVE. FIM GAIN} = \frac{\text{TOTAL OF AVE. FIM GAINS}}{\# \text{ OF HOSPITALS}} = \frac{185.6}{16} = 11.6
\]

**LENGTH OF STAY EFFICIENCY**

\[
\text{LENGTH OF STAY EFFICIENCY} = \frac{\text{TOTAL OF LOS EFFICIENCY}}{\# \text{ OF HOSPITALS}} = \frac{5.68}{16} = .36
\]

**CHARGE EFFICIENCY**

\[
\text{CHARGE EFFICIENCY} = \frac{\text{TOTAL OF CHARGE EFFICIENCY}}{\# \text{ OF HOSPITALS}} = \frac{10.67}{16} = .67
\]

**UNITS**

**AVERAGE FIM GAIN**

\[
\text{AVE. FIM GAIN} = \frac{\text{TOTAL OF AVE. FIM GAINS}}{\# \text{ OF UNITS}} = \frac{77.7}{5} = 15.5
\]

**LENGTH OF STAY EFFICIENCY**

\[
\text{LENGTH OF STAY EFFICIENCY} = \frac{\text{TOTAL OF LOS EFFICIENCY}}{\# \text{ OF UNITS}} = \frac{2.98}{5} = .59
\]

**CHARGE EFFICIENCY**

\[
\text{CHARGE EFFICIENCY} = \frac{\text{TOTAL OF CHARGE EFFICIENCY}}{\# \text{ OF UNITS}} = \frac{4.15}{5} = .83
\]
APPENDIX K

ILLUSTRATION OF TABLE 13 CALCULATIONS
ORGANIZATIONS ADMITTING PATIENTS BEFORE 1986

<table>
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<th>Calculation</th>
<th>For Org. in This Category</th>
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<td>Total Ave. FIM Gains</td>
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<td>Length of Stay Efficiency</td>
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<td>Total of LOS Efficiency</td>
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<td>Total of Charge Efficiency</td>
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</table>

ORGANIZATIONS ADMITTING PATIENTS AFTER 1985

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<td>Length of Stay Efficiency</td>
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<td>Total of LOS Efficiency</td>
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APPENDIX L

ILLUSTRATION OF TABLE 14 CALCULATIONS
### ORGANIZATIONS OF 120 - 72 BEDS

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<th>Total Ave. FIM Gains</th>
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<th>% of Organizations</th>
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<th># of Organizations</th>
<th>% of Organizations</th>
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<th># of Organizations</th>
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### ORGANIZATIONS OF 60 - 40 BEDS

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<th>% of Organizations</th>
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<th>% of Organizations</th>
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<th>% of Organizations</th>
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<tbody>
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<td>6.1</td>
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### ORGANIZATIONS OF 25-15 BEDS

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Total of Los Efficiency = For All Org. in This Category = 2.96 = .59

Total of Charge Efficiency = For All Org. in This Category = 4.15 = .83
APPENDIX M

ILLUSTRATION OF TABLE 15 CALCULATIONS
### Low Admission FIM Group

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<td>Total of LOS Efficiency</td>
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<td>For All Org. in this Category</td>
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### Mid Admission FIM Group

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<td># of Organizations</td>
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<td>12.4</td>
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</tr>
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<td>Total of LOS Efficiency</td>
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HIGH ADMISSION FIM GROUP

TOTAL AVE. FIM GAINS
AVE. FIM GAIN = FOR ORG. IN THIS CATEGORY = \( \frac{76.3}{7} \) = 10.9
# OF ORGANIZATIONS

LENGTH OF STAY EFFICIENCY
TOTAL OF LOS EFFICIENCY
STAY EFFICIENCY = FOR ALL ORG. IN THIS CATEGORY = \( \frac{2.6}{7} \) = .37
# OF ORGANIZATIONS

CHARGE EFFICIENCY
TOTAL OF CHARGE EFFICIENCY
CHARGE EFFICIENCY = FOR ALL ORG. IN THIS CATEGORY = \( \frac{4.48}{7} \) = .64
# OF ORGANIZATIONS
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