A STROKE CARE PROGRAM:
A MODEL FOR USE IN
AN ACUTE CARE HOSPITAL

by

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CHAPTER I

INTRODUCTION TO THE PROBLEM

Cerebrovascular disease ranks third as a leading cause of death in the United States today being surpassed by heart disease and cancer.[2 18 30] This accounts for about 200,000 deaths per year.[30 44] In addition, it is estimated that there are 2,000,000 people who have experienced a stroke and are living with varying degrees of physical and mental disability.[30]

Many of these individuals sustain neurological damage and live, but are not so fortunate as to receive effective treatment at the onset of their symptoms and hence do not escape devasting effects of a stroke. Many individuals are poor surgical risks because of failing general health, because of widespread involvement of blood vessels, or because the special surgery required is not available to them. Others do not fulfill the rigorous criteria necessary for candidancy in drug therapy groups. Still others have stroke symptoms but defer medical consultation until a cerebral insult occurs and they are left with a paralysis. This group of present and potential handicapped individuals requires the assistance of health care workers who are acutely aware of their needs as stroke victims.

More sophisticated methods of diagnosis, furthermore, have helped to better define this cerebrovascular disease population. In conjunction with physical examination, angiography is presently considered the most reliable diagnostic tool in the study of cerebrovascular disease. Catheterization through the aortic arch

can provide visualization of intracerebral and extracerebral vessels. Such pictures captured on x-ray facilitate the detection of stenosis, occlusions, aneurysms, infarcted and hemorrhagic areas, subdural hematomas, tumors and other pathological conditions.[4] Brain scanning with radioisotope injection has proven useful in detecting intracranial abnormalities in some individuals. The dimensions of this technique are still being explored and it is likely that scanning will be of greater diagnostic merit in the future.

With the progress made so far in locating cerebrovascular abnormalities, in identifying specific types of these abnormalities, and in treating patients with these findings, has come an increased hope of finding ways of preventing and better ways of treating cerebrovascular disorders and their deleterious effects. It is a well recognized fact that neural tissue recovers from ischemia much more poorly than other types of tissue.[45] Damage is often serious and permanent. Cerebrovascular lesions of varying etiologies can leave their victims stricken with neurological deficits which may never be completely reduced by even the most vigilant rehabilitative efforts in the most highly motivated individuals. Continuous research efforts are needed to fill in the knowledge gaps regarding prevention of cerebrovascular abnormalities and correction of abnormalities once they occur.

One large area of concern in the study of cerebrovascular disease is the acute episode of cerebral insufficiency with neurological deficit generally associated with the formation of a thrombus, an embolus or hemorrhage. Such acute episodes are termed cerebrovascular

accidents, or are more commonly referred to as strokes.

Numerous individuals have been saved from experiencing debilitating effects of a stroke by undergoing surgical removal of atheromas blocking blood vessels whose patency is essential for adequate cerebral circulation. Similarly, some types of cerebral aneurysms have been protected from rupture and hemorrhage by clipping the abnormal portion of a vessel[40] or by reinforcing with grafts weakened areas of vessels.[46]

Although transient ischemia attacks generally do not occur with any predictable certainty, there is some evidence to support the opinion that a large number of individuals who have such attacks continue to have them until the attacks culminate in a massive stroke.[46] Controlled studies of individuals receiving anticoagulants have shown anticoagulants to be effective in reducing the number of transient ischemia attacks.[46] It seems reasonable to assume that some fortunate individuals have been saved from paralysis because of this therapy.

According to data obtained by Marshall (1964), long term hypotensive treatment was effective in reducing the number of strokes in a carefully selected group of patients under controlled drug therapy.[19] Following the publishing of the results of this study, greater use of antihypertensive therapy has been employed by practitioners. Wright suggests that widespread use of antihypertensive drugs has been significant factor in reducing the number of deaths due to stroke.[45]

With an increased understanding, therefore, of the etiology of

cerebrovascular disease and of the magnitude of the victim population, more emphasis has been placed on the determination of premonitory signs and symptoms of strokes and how to prevent full maturation of these signs and symptoms. In addition health care workers must be trained, must have the resources, and must be committed to the achievement of the maximum level of rehabilitation possible for each stroke patient.

STATEMENT OF THE PROBLEM

The need for stroke rehabilitation arises from the functional deficits that follow a stroke. These deficits are individual and are determined by the location and severity of the cerebral insult. Many stricken individuals do not survive the first attack; others are left with various incapacities, such as hemiparesis, hemiplegia, lack of bowel and bladder control, mental deterioration and speech disorders which make assistance necessary in re-learning how to perform activities essential to daily living. Still others sustain injury that is virtually repairable with minimal or no treatment.

The goal of stroke rehabilitation is essentially that of dealing with whatever disability remains by narrowing the gap between the individual's post-stroke performance level and his normal pre-stroke or optimum performance level. Very often the optimum performance level is unattainable, but much can usually be done to protect the present level and to regain a performance level that includes some degree of ambulation, self-care and continence.

Efforts have been exerted to obtain an accurate picture of what a comprehensive rehabilitation program can actually offer stroke victims. When recovery is based on re-learning ambulation, self-care, and continence, Rusk found that 90 per cent of hemiplegic patients admitted to a rehabilitation program can recover.[33] Rusk and Wylie estimate that among rehabilitated patients 50 per cent are able to be taught to do gainful work.[33 47] In comparison, Covalt states that 90 per cent of all hemiplegics who enter active

programs of rehabilitation can be taught ambulation and self-care but that only 30 per cent can be taught to do gainful work.[7] Because of the uniqueness of each stroke patient's situation regarding the extent of cerebral injury, motivation toward recovery, bodily response, and variations in stroke care programs, it is exceedingly difficult to establish an accurate means of comparing results among different rehabilitation programs. Whatever the actual recovery percentages may be, return to a more normal level of functioning in any number of patients would seem to justify an organized attempt at rehabilitation.

Rehabilitation needs of patients with long-term illnesses have been the justification for the existence of specific rehabilitation centers in America and abroad. Because care after a stroke is usually of long duration, stroke victims have found themselves in these rehabilitation centers. However, the literature has established that more stroke victims are treated in acute care hospitals rather than in these special care centers.[47] It would seem of paramount importance then that hospitals as prime givers of care to stroke patients must also provide organized treatment programs in order to obtain maximum performance levels in patients who come to them for care.

If an organized treatment program for stroke patients is to be provided in a hospital, consideration must be given to the components of such a program and to the organization and implementations of the program within the structure of the existing health care services provided by the hospital. The important tenets of stroke care have

to be defined and translated into goal directed activity and supported by a firm rationale. The external means of reaching these goals must be available. Staff selection and role functions must be made explicit and a suitable physical environment has to be arranged.

When greater numbers of treated stroke patients are able to return home from the hospital, when care in an extended care facility can be considered more temporary than permanent for stroke patients and when the benefits of hospital outpatient services are more clearly seen as adjuvants to home care, it follows that maximum rehabilitation of stroke patients treated initially in a hospital is dependent upon early implementation of an organized stroke care program in that hospital.

PURPOSE OF THE STUDY

This study was undertaken to design an organized stroke care program for implementation in a specific, small acute care hospital which would promote maximum restoration of function for the stroke patients admitted for diagnosis and treatment in that hospital.

ASSUMPTIONS

1. The implementation of the proposed stroke care program would meet more patient rehabilitative needs than are being met by the existing treatment plans of stroke patients in the study hospital.
2. Considerable discussion of the stroke care program outlined in this study would necessarily preceede acceptance and utilization of the program by the medical and nursing staffs of the study hospital.
3. Individuals working in the study hospital who have a background in stroke rehabilitation would be actively involved in the implementation of the stroke care program.
4. The study sample would be representative of the stroke patients admitted for diagnosis and treatment in the study hospital.

LIMITATIONS

1. Resources utilized in the development of a model stroke care program for the study hospital were limited to the literature reviewed, data collected through a medical record review, observable data gained by the investigator in two acute care hospitals each operating a stroke care program, information gathered through verbal exchanges with nursing service and department heads of physical and occupational therapy in the study hospital and experimental knowledge gained by the investigator as a former staff member of the study hospital.

2. The medical staff of the study hospital was not consulted, as a whole, during the formulation of the proposed stroke care program. It was felt that greater cooperation might be gained from the physician population if the completed study, rather than partial information about it, were shared.

DEFINITIONS

Transfer - the process of moving a patient from one surface to another as from bed to wheelchair, wheelchair to toilet in a coordinated manner.

Paresis - muscular weakness

Hemiparesis - muscular weakness involving one side of the body

Paralysis - temporary suspension or permanent loss of function in a body part

Hemiplegia - paralysis on one side of the body

DESCRIPTION OF THE STUDY

The lack of an organized approach to rehabilitation of stroke patients admitted to the hospital for care was noted in the study hospital. The nursing service department of the study hospital was contacted and expressed verbal agreement was given to the plan of the investigator to develop a stroke care program model for the hospital.

A statement of the problem and purpose of the study were developed. Permission was obtained for the study to be done at the designated hospital.

Eight areas germane to the establishment of a stroke care program were delineated for inclusion in the study and the literature was consulted for available information related to these areas. The eight areas explored were:

1. Existing stroke care programs.
2. Definition of the team approach to stroke care.
3. Determination of appropriate health care providers and their respective roles as stroke team members.
4. Criteria for selection of nursing personnel and staffing of the stroke care program with nursing personnel as part of the master nursing staffing plan for the acute care hospital.
5. Determination of the stroke program population.
6. Basic components of stroke care.
7. Selection of a suitable physical environment.

8. Selection of appropriate equipment.

Following the literature review, a medical record review was conducted. The records reviewed were those of patients admitted and treated for stroke during the five month period from January 1972 through May 1972. It was felt that the time interval and the corresponding records provided a study sample representative of the stroke patients admitted for diagnosis and treatment in the study hospital. The corresponding records were of the latest codified through the medical record department, and the time interval selected spanned two seasons when extraneous variables, such as low hospital census and vacationing employees, would seemingly not confound the findings.

Data were obtained by the record review to help establish the need for an organized stroke care program in the study hospital, to obtain pertinent information regarding the patient population that might be expected to benefit from such a program, and to identify other requisites necessary to the establishment and maintenance of a stroke care program.

The date collected by the medical record review was limited to eleven major variables:

1. Etiological cause of the stroke
2. Sex
3. Age
4. Length of hospitalization
5. Unit (units) of hospital where patients received treatment
6. Performance of range-of-motion exercises by nursing personnel

7. Inpatient therapies provided
8. Use of Visiting Nurse Coordinator and other community resources
9. Outpatient therapy referrals
10. Consultative services provided during patient hospitalizations
11. Discharge destinations

Individual consultation sessions were held with nursing services and the heads of the physical and occupational therapy departments for discussion of the eight identified areas of concern in designing a stroke care program for the study hospital.

Having been a member of the hospital staff for three years, the investigator was able to draw on experimental information about the administrative structure, role functions, and physical environment of the study hospital in planning the stroke care program.

In addition, observable data was obtained by the investigator in two separate hospital settings that presently provide organized stroke care programs. Practitioners involved in stroke care were also consulted. The stroke care program was designed for the study hospital based on the information gained through the literature review, the medical record review and experiential data collected by the investigator. It was felt that the program might also serve as a model for adaptation in other similar hospital settings.

CHAPTER II

REVIEW OF THE LITERATURE

Existing Stroke Care Programs

Responsibility for the rehabilitation of stroke patients has been assumed primarily by rehabilitation centers around the country. Some well known centers include Bellevue Medical Center in New York; Kenny Rehabilitation Institute in Minneapolis, Minnesota, and Rancho Los Amigos Hospital in Downey, California.

Although they have admitted stroke patients for diagnosis and treatment, acute care hospitals have seemingly ignored the rehabilitation needs of stroke patients with the "justification" that the process of rehabilitation is too costly and too long and is, therefore, not the responsibility of a facility designed to give acute care. This attitude is in opposition to the widely accepted fact that stroke rehabilitation should begin as soon as the patient is admitted to a facility for care[21 22 25 37 39 47] no matter how long the patient might be expected to stay. This suggests that rehabilitative efforts need to be initiated in the diagnostic phase as well as being a major part of the treatment phase. This does not mean, however, that all stroke patients will fill acute care beds until their rehabilitation is considered complete. The responsibility of providing the best possible care to stroke patients includes rehabilitation measures. Bringing rehabilitation efforts into the diagnostic and early treatment phases can save time, money, muscles and spirit necessary to achieve continued results in a treatment

program that extends past help in an acute care setting. Preventative rehabilitation carried out in the acute hospital can help prevent painful contractures, healing decubitus ulcers, initiating bowel and bladder training or covert feelings of despair or hopefulness and in so doing assist the patient in achieving self-care much earlier.

In support of early rehabilitation practices, Dr. Nickel of Rancho Los Amigos Hospital comments that, "It is unfortunate that the physical therapist must often spend so much time attempting to correct contractural deformities which would not have occurred if adequate nursing care had been provided in the early stages of stroke."[22]

Numerous health professionals are becoming aware of the need for better approaches to the prevention, diagnosis and treatment of cerebrovascular diseases. Enthusiasm has led to action among several identifiable groups of individuals. Among these groups is the Regional Medical Programs that came into existence following the enactment of Public Law 89-239 in 1965.[38] These state organizations under the guidance of a federal parent, Regional Medical Programs Service, have initiated programs to upgrade the caliber of care for stroke patients in acute care hospitals in both urban and rural areas. These programs are sophisticated beginnings from which a more comprehensive attack on all cerebrovascular disease will hopefully emerge on a national scale.

There appears to be much variance in the approaches selected by individual state Regional Medical Programs toward conquering

the stroke problem in their particular areas. According to the available literature, some of these programs have focused primarily on the training of stroke care teams. Others have started with a nucleus of trained stroke care experts and have concentrated more on treatment than training.

Area VIII Regional Medical Program in California launched a program in the late 1960's for training of stroke care teams. Thirty acute hospitals and 73 extended-care facilities were selected to participate in the program based at Memorial Hospital at Long Beach. It is anticipated that the qualitative effects of this training program will be reflected in better care for the stroke patient with less residual disability as well as improved morbidity and mortality statistics associated with stroke.[38]

Another program focusing on training for better care of stroke patients is operated by the Indiana Regional Medical Program. Physicians, nurses, and therapists from community hospitals are invited to observe and train in the Indiana University Medical Center's six bed stroke care unit. One of the primary goals of this program was to improve stroke care in 64 community hospitals that had no physical rehabilitation program. After 24 months, two to three therapy programs were started in 40 participating hospitals.[23]

Similarly, the North Carolina Comprehensive Stroke Program was instituted in order to deliver a better quality of care to stroke patients in the state ranking third in incidence and mortality from stroke.[39] Through greater use of manpower, increased accessibility to health services, better distribution of health resources and

economy of time in providing services, the community stroke programs now make stroke care more readily available for one million predominantly disadvantaged individuals who live in rural areas of North Carolina. Their 1971 report boasts involvement of twenty-two hospitals, eight nursing homes and nineteen public health agencies. Comparison of data for 122 pre-stroke program patients and 145 post-stroke program patients shows a discharge date on the average of 2.7 days sooner for the post-stroke program patients. Also, the average hospitalization cost for this group is $240.00 less than for the pre-stroke program patients.[39]

Some positive treatment results have also been recorded for the Regional Medical Program efforts at Licking County Hospital in Ohio. Out of 106 stroke patients evaluated and placed in the treatment program, a 34 per cent mortality rate claimed thirty-six. Of the remaining seventy patients, however, thirty-five (50 per cent) were able to walk out of the hospital and go home.[41] This is a respectable percentage when considering the high mortality associated with strokes. These results are attributable not only to the specific treatment given, but also to the fact that rehabilitation was begun early enough to preserve active foot dorsiflexion and hand function in 60 per cent of the patients. Results also showed that many of these patients rapidly became independent in all activities of daily living and were able to return home in less than four weeks.

A follow-up study was conducted one year later on the survivors of the Licking County Hospital program. A 56 percent mortality rate within the first year after onset of stroke was recorded which again

verifies the high incidence of death associated with stroke. Among the 44 percent survivors, however, 64 percent were totally independent in dressing, 75 percent were independent in feeding, 56 percent could bathe themselves and 65 percent were independent ambulators.[42] Although these statistics do not reflect a curbing of stroke mortality because of the initiation of an organized stroke care program, it does give evidence of positive results that can be achieved by surviving stroke victims who undergo a rehabilitation program.

The Oregon Regional Medical Program has also marshalled efforts toward improving care for stroke victims. Under the auspices of the Oregon Regional Medical Program a stroke care unit was set-up in one of the Portland hospitals in April of 1969.[15] As with all the Regional Medical Programs reviewed, the team approached forms the backbone of this program as well. The individuals providing stroke rehabilitation in the Portland hospital unit have placed much stress on family involvement in the rehabilitation process. These efforts have resulted in a 60 to 75 percent return of stroke patients to their homes following hospitalization.[15] This statistic reflects a 10 to 15 percent increase of home returns above that recorded for the Licking County Hospital program.[41]

Efforts have been made to evaluate and develop the rehabilitative potential of stroke patients independent of the Regional Medical Programs.

Stroke Intensive Care Units have opened in a number of hospitals as another attempt at controlling stroke mortality. More specifically, such units were opened to see if the number of deaths due to stroke

might be reduced by offering closer medical and nursing care than available on general hospital wards. Dr. Bryan Kennedy, Director of the stroke intensive care unit at St. Francis Hospital in Pittsburgh, does not feel such units are justified on these grounds because the mortality rate has remained elevated despite the provision of intensive care in the acute phase following stroke. Further he believes that the high mortality is due to the severity of tissue destruction caused by many strokes.[20] Dr. Edward Metts who heads a stroke intensive care unit at Candler General Hospital in Savannah, Georgia, seems to agree with Dr. B. Kennedy's point of view. Dr. Metts urges that more energy be put into the rehabilitation phase than in the acute phase in order to increase the quality of a patient's life after stroke.[20] Perhaps when we are better able to understand the etiology and course of stroke evolution, stroke intensive care units may be of greater value in saving lives.

Dr. Mark Dyken of Indiana University Hospitals disagrees with his colleagues, Drs. Kennedy and Metts, regarding stroke intensive care units as a means of reducing stroke mortality. Dr. Dyken's unit has recorded a low 12 percent mortality for stroke victims. He attributes this low mortality rate to the greater facility with which he has been able to resolve complications of stroke debilitation in the intensive care unit as compared to a general hospital ward.[20]

The differences in finding and opinions is not easily explained. No indication was given that the same variables were held constant in collecting, compiling, and analysing the data for the separate

units. An important consideration, however, can be drawn from this example of varying opinions; namely, that the direction and vehicle of health care in individual facilities must be based upon their patients' needs and those needs can be expected to vary among different patient populations.

Aside from the rehabilitation centers, Regional Medical Programs and Stroke Intensive Care Units, some hospitals are seeking to upgrade care of stroke patients on their general hospital units. St. Luke's Hospital in New Bedford, Massachusetts, boasts some impressive results with its twelve bed unit. This stroke rehabilitation unit consists of three, four-bed wards that are part of a thirty-six bed medical unit. Among 372 patients treated in their unit, 50 percent were discharged directly to their homes.[35] This figure is 10 to 15 percent lower than sighted earlier for the Portland hospital stroke unit but it is the same statistic recorded for the Licking County Hospital program. Home, as an immediate discharge destination for 186 persons, indicates a drastic reduction in the number of individuals who would probably have been sent to extended care facilities if no rehabilitation program had been available. Also at St. Luke's, 80 percent of those discharged achieved complete independence in self-care activities. This statistic again reflects similar findings for achievement of self-care independence in other stroke care programs.

A hospital in the neighboring state of Washington, has developed a program of care for stroke patients on their neurosurgical unit. (Investigator visited) This program differs from the other programs

mentioned so far in that it evolved primarily through the efforts of nurses, rather than physicians, to improve the care of stroke patients. Although perhaps less sophisticated in its planning, organization, and delivery of care than the other programs mentioned, this program would seem to be more of the type that most acute care hospitals might be able to afford and develop in order to bring about a more beneficial hospitalization for stroke patients.

TEAM APPROACH TO STROKE CARE

With a wide variety of facilities treating stroke victims, it is evident that there will be variations among the individual treatment programs. Institutional purposes and resources will determine the length and breadth of the stroke care programs. Arrival at a particular stage in the process of recovery may necessitate the end of care in one facility and the beginning of care in another facility or a return home with assistance from community health services. As mentioned previously, the main directive for any facility is to provide the best care it can offer within the timespan that stroke patients are with them. In order to offer their best, concern must be given to how care is to be delivered.

The focus of this paper is on the acute care hospital as a legitimate provider of beginning stroke rehabilitation. The means of delivering stroke care will then be restricted to those traditionally available or to those means which realistically might be procured for treatment in the acute care setting.

The team approach has proven to be the most effective means of providing care for patients with multiple problems. Since strokes frequently cause extensive neurological deficits, the team approach has been adapted to the care of stroke patients. According to the Joint Committee for Stroke Facilities, "The essential ingredient of a successful stroke rehabilitation program is the constant and active teamwork of properly trained personnel."[32] Dr. Howard Rush of Bellevue Medical Center in New York supports the team approach as he

has found that "for rehabilitation, evaluation, and treatment, the team approach has proved far more successful than the utilization of separate services."[33]

It seems reasonable to assume that without the diversity of skills and the unity of approach possible with a team, fewer patient needs would be identified and/or satisfactorily met.

DEFINITION OF THE TEAM APPROACH TO STROKE CARE

The health professionals who form this stroke team varies with the availability of members and secondly with the individual needs of the patients being rehabilitated.

One authority says that stroke team members should include: a physiatrist, a neurologist, the personal physician, house-staff physicians, consulting specialists, a rehabilitation nurse specialist, general nursing staff skilled in performing rehabilitation measures, a physical therapist, an occupational therapist, a psychologist, and a dietician.[32] To have all these individuals available in one setting would most likely be possible only in a large medical center. And then, not all these individuals would be needed in the rehabilitation of every stroke patient. A team utilized in two programs includes: physician trained in stroke rehabilitation, rehabilitation nurse specialist or nurse coordinator, or rehabilitation trained staff nurses, physical therapist, occupational therapist, psychologist, speech therapist, social worker, community health nurse, and the patient with his family.[35 38] Other existing programs employ different combinations of individuals in the allied health professions.[23 33 41 46] The individuals involved and the precise duties they assume will depend upon the size and goals of the institution, the therapy programs offered, the availability of staff for employment in stroke rehabilitation and the specific needs of the stroke patients participating in the care program. Some of these individuals may be consultants employed

part-time in a facility or shared between two (or more) facilities when patient demands do not warrant the contribution of professional services for a full eight hours each day.

The collective role of the stroke team is perhaps best realized in the exchange of information provided in regular multi-disciplinary conferences. Face-to-face interchange of information promotes communication between team members in order to bring about the desired integration and coordination required in delivering complex care to patients.[32] Information exchanged includes: evaluation of rehabilitation potential, planning of goals and the specific means to be used in achieving these goals, evaluation of progress, revision of goals and means when indicated, discharge planning, and sharing of information gained from family-staff-patient interactions.

Promoting maximum communication levels, as well as offering his special skills in rehabilitating stroke patients, is thus the role of every team member.

> "When nurses know what doctors have in mind, when doctors know how nurses work, when nurses know the principles of physical therapy, and when they learn the techniques of self-care from occupational therapists, when speech therapists teach all personnel how to communicate with the disabled, and when everyone of the rehabilitation team knows how every other member plays his part, the chances of success are great."[11]

Based on the previously described stroke care programs and the health care professionals included on the respective teams, it seems reasonable to assume that team members most needed on a stroke team in a small acute care facility, such as the study hospital, should include:

1. Physician
2. Nurses skilled in stroke rehabilitation
3. Nurse Coordinator
4. Physical Therapist
5. Occupational Therapist
6. Social Worker and/or Public Health Nurse
7. Speech Therapist
8. Psychologist

A description of the primary responsibilities for each of these stroke care team members follows.

DETERMINATION OF APPROPRIATE HEALTH CARE PROVIDERS AND THEIR RESPECTIVE ROLES AS STROKE TEAM MEMBERS

When stroke rehabilitation means the identification and solution, as well as possible, of all problems plaguing a stroke victim, then stroke rehabilitation requires medical supervision so that all available appropriate means of modern medicine can be legitimately marshalled toward optimum recovery of the patients. A comprehensive stroke rehabilitation program requires the knowledge and skills of a physician who is well acquainted with the needs of stroke patients and who displays a keen interest in guiding a team of selected health care workers toward meeting rehabilitative goals of their stroke patients.

Having a physiatrist or neurologist as director of a stroke care program would seem to be ideal because of the nature of the extensive training these specialists receive. However, the lack of availability of such specialists in a small private hospital might prevent the assistance of a physiatrist or neurologist as head of a stroke care program there. A physician of another speciality who has received additional training in stroke rehabilitation probably would be a more likely individual to fill that position.[32]

The exact role of the medical director will undoubtedly vary from setting to setting and from individual to individual. There are, however, certain identifiable responsibilities that the stroke care program director might be accountable for in any setting. The

director has to be familiar with the functions and responsibilities of the other team members[32] and stimulate the team spirit in providing the best rehabilitative means available for each patient referred to the team. Chairing regular team conferences for evaluation of patient status seems to be one vehicle for fulfilling this responsibility. Since the physician has to be knowledgable about the progress of each team patient, making rounds in the nursing and therapy areas should provide observable data about patient performance not available in the team conferences. Impromptu staff-patient exchanges in the therapy areas should also facilitate ongoing evaluation of rehabilitative measures in meeting patient's needs.

It is the physician-director's responsibility to diagnose the type of stroke a patient has had and to prescribe treatment.[25] The amount and speed with which a patient is encouraged to become physically active in his rehabilitation program is greatly influenced by the vascular structural changes that accompany a stroke.[7] Strokes caused by thrombus, embolus or hemorrhage may require different considerations in adjusting the rehabilitation process to a patient. As part of his responsibility for providing treatment, the medical director of the stroke care program must be mindful of patient readiness for the various stages of rehabilitation. The matter of readiness involves the selection of appropriate patients for admission to the stroke care program and entails the decision as to when th begin each patient with such activities as chair setting, ambulation, showering, the making of definite discharge plans, et

cetera. Decisions regarding patient readiness to progress to a higher level of independent activity and to be discharged are derived from the director's own observations and from the evaluative communications received by the director from the team members which, in turn, were derived from demonstratable patient performance.

Another responsibility rightly belonging to the physician in charge of a stroke care program is in the area of public relations. He needs to serve as a laison between the stroke team and the hospital and the community and individual patient physicians. The medical director must represent the stroke team and communicate its needs, goals, successes, and failures to the rest of the hospital in appropriate staff meetings.[38] Attendance at community wide conferences can promote the establishment and continuation of stroke care programs in other acute care hospitals.

Needs and orders associated with the stroke care program are primarily the concern of the director, but the attending patient's physician retains his right to question or encourage decisions made about his patient. The stroke team needs to retain the cooperation of the patient's own physician in order to maximize the results of the entire rehabilitation process.[32] Following discharge, contact with the rehabilitation experts may still be necessary, but the personal physician needs to encourage this activity as part of the plan for keeping the patient in a well compensated state.

Nurses are the primary professionals involved in the treatment of stroke patients.[8 22] Rehabilitation of patients not only requires that all nurses involved in it be knowledgable and skilled in

rehabilitation measures, but also that they utilize the nursing process in providing nursing care. Employment of the steps of assessment, planning, implementation, and evaluation should provide the necessary rationale for judicious application of rehabilitative measures in the care of individual stroke patients.

The development of functional nursing care plans is an invaluable tool to the rehabilitation nurses as well as to the entire stroke care team. In order to formulate an individualized nursing care plan for each stroke patient, consideration is given to needs identifiable for general nursing care of all stroke patients. Identification of needs specific for each patient is derived from nursing contacts with patients, their families, and input from other stroke team members. The report of the Joint Committee for stroke facilities provides a lengthy list of possible needs with guides for appropriate nursing activities. Only a broad overview is presented here. The reader is referred to the entire report for a more detailed explanation.[31]

The rehabilitation nursing assessment should include identification of physiological as well as psychosociological needs. Assessment should include these considerations:

Psychosociological Considerations	Physiological Considerations
Level of Anxiety	Level of Consciousness
Coping Mechanisms	Circulatory Status
Strength of Family Relationships	Respiratory Status
Concept of Self-Image	Fluid and Electrolyte Balance

Psychosociological Considerations	Physiological Considerations
Motivation Toward Rehabilitation	Oral Hygiene
Cultural Mores	Bladder and Bowel Functioning
Communication Patterns	Sensory Functioning Pain
	Motor Functioning Range-of-Motion
	Performance Level in Performing Activities of Daily Living
	Transfer Skills
	Ambulatory Status
	Visual Status
	Hearing Status
	Skin Integrity

(Modified from Report of Joint Committee on Stroke Facilities)[31]

Assessment of strengths and limitations in these areas should facilitate the diagnosis of nursing problems and the selection of appropriate measures to solve the identified patient problems or needs. The patient's needs and nursing interventions are then recorded on the nursing care plan and shared with the entire stroke team. The nursing care plans should be in a constant state of revision in order to keep them current with a patient's progress.

Specific nursing measures are associated with the role of stroke rehabilitation nurses and are likely to flow from nursing assessment of most stroke patients. These specific nursing measures include:

1. Prevention of deformity
2. Positioning correctly in bed
3. Institution of active and passive range-of-motion exercises
4. Helping the patient to perform essential activities of daily living
5. Bowel and bladder training
6. Initiating transfer and ambulation[31]

Positioning is of first importance. Frequent repositioning is necessary and all positions should be used. Lying prone, although not usually encouraged in hospital settings, promotes greater drainage of secretions and is also very effective in preventing deformities of the shoulders, hip and knees.[22] Paralyzed or paretic limbs should always be placed in a position of function.[22] Footboards, if adjusted to a patient's height are helpful in preventing equinas deformity. It is the responsibility of the nursing staff to make sure footboards are used properly to encourage the desired effect. Equinas deformity of the feet, is the most common deformity in stroke patients.[22] Properly placed pillows, rolls or sandbags are assistive devices that nurses can employ in preventing external rotation of hip joints.

"If every joint in the affected limbs is taken through its full range of motion at least once a day, contractural deformities can be practically eliminated."[22] The physical therapist will ordinarily assume responsibility for range-of-motion with nursing in the reinforcing role. When there is no physical therapy department available, or when the department is closed on weekends, then nursing needs to

assume the responsibility for performing range-of-motion exercises since elimination of this activity for certain patients would impede their recovery process.

Pressure sores are another concern of the stroke team and of particular concern to rehabilitative nurses. Prevention lies in the frequent changing of patient position and in maintaining meticulous skin care. Although a patient's position should be changed at least every two hours, nursing judgment may require more frequent turning for specific patients. Barring other medical problems, there is no need for a patient to stay bedridden once he has passed through the acute stage of stroke. Perhaps one of the best means of preventing decubiti in stroke patients is to encourage wheelchair activity. When wheelchair activity is assumed, it becomes important to teach the patient how to shift his weight in the chair to prevent ischial decubiti. Ambulation reduces the propensity for forming pressure sores still further, and is a major step in regaining greater independence. It is in the sitting and standing positions that patients are best able to perform most of the necessary activities of daily living.

Bowel and bladder re-training is also a major responsibility of staff nurses. In the acute stage of illness following stroke, catheterization may be necessary, but catheters should be removed as soon as possible. Tidal drainage is a useful adjuvant in maintaining or encouraging proper bladder muscle tone and capacity and therefore in conditioning the bladder to resume the normal process of urination.[29] External catheters are sometimes helpful in regaining

a more normal means of emptying the patient's bladder. Maintaining a regulated fluid intake and developing a habitual emptying of the bladder at regular intervals can promote urinary continence.[29] In bladder re-training, moreover, it has been found that patients who are permitted to dress in their own clothing are less likely to be incontinent than when they are made to wear institutional garb.[25 35]

Bowel continence is usually easier to regain than bladder continence.[22] The normal pattern of fewer bowel movements as compared to more frequent urinary excretions is probably the major contributor to this difference. Stroke patients, however, often undergo a period of bowel irregularity following a stroke. For these patients mild cathartics, a regular fluid intake of 3000ml, one to two ounces of prune juice every morning, suppositories, and regular toileting can usually prevent bowel problems.[29]

Assuring that patients consume a well-balanced diet is typically a responsibility assumed by nurses. A well-balanced diet not only encourages proper bowel function but also promotes tissue repair and maintenance of a consistently high energy level.

A stroke can cause drastic changes in the life of an individual. Loss of self-esteem or distortions of body-image can precipitate behaviors that might impede nurses' (and other team members) attempts to guide patients through the rehabilitation process. Fulfillment of psycho-social needs can facilitate gains in the physical aspects of the rehabilitative process.

As reported in the California Area VIII Regional Medical Program for stroke care, the services of a nurse coordinator are basic

to a hospital stroke care program. Her role in this particular program is to see each new stroke patient in her institution, initiate Phase 1 at the physician's request, coordinate the help of the stroke team and collect data for the Area stroke registry.[38] Elsewhere in the literature similar responsibilities are reportedly carried out by a rehabilitation nurse.[32] Special training in rehabilitation, or more narrowly in stroke rehabilitation, is the designated prerequisite for this job, no matter what the specific job title attached to it. A detailed description of the role of the clinical specialist in rehabilitation is available[24] but for the purposes of outlining the responsibilities of the rehabilitation specialist as they pertain to stroke rehabilitation, reference is given to the functions outlined by the Joint Committee for Stroke Facilities:

1. Making early patient contact to evaluate for prompt referral to hospital-based resources;
2. Ensuring that the rehabilitation plan jointly agreed upon is followed, working closely with the general nursing staff to assess special needs, planning with nurses an appropriate written nursing care plan and assisting in the cooperative planning, initiating, and implementing of the restorative nursing measures devised for each patient;
3. Initiating staff conferences to ensure communication between nursing personnel, other allied health personnel, the physicians, and the family;
4. Training other personnel (licensed practical nurses, nurse's aides and attendants) and families in appropriate restorative

nursing techniques and care; and,

5. Aiding the family in planning discharge to home, nursing home, extended care facility or intermediate care facility and making certain that the social worker is involved whenever necessary.[32]

In a more general sense, the role of the stroke rehabilitation nurse requires competency in promoting good interpersonal relations among the patients, among the staff in the stroke program and in the rest of the hospital, and in the community. The nurse needs to draw upon rehabilitative skills for the benefit of patients and staff, and needs to provide direct care to selected patients in order to teach that appropriate care is based on patient needs.[24]

Another vital member of the stroke rehabilitation team is the physical therapist. During initial contact with a new stroke patient, the physical therapist evaluates the level of functioning in the patient's upper and lower extremeties as well as beginning treatment.[22 35 38] This time might also be used to ascertain the patient's level of consciousness, degree of orientation, level of cerebration, and ability to cooperate in the therapy program[35] as well as to establish realistic therapeutic goals.[22]

In the treatment of paralysis, passive exercises usually precede active exercises.[3 7] Bucholz states that the difficulties encountered in doing passive full range-of-motion determine how early and to what extent the patient can become actively involved in his rehabilitation. As noted earlier, it is the physician's responsibility to determine when the patient can become actively involved in the

rehabilitation process. This decision is based upon input received from the physical therapist as well as from other team members, and as viewed in light of other information regarding the cause of the stroke, as well as information about the healing process and the medical history of the patient.

Active range-of-motion exercise is an important part of the therapy process and is usually continued until normal functioning returns or until the amount of daily functioning is sufficient to maintain near normal range-of-motion. Achievement of sitting balance for a patient is another responsibility assumed by the physical therapist[7] unless, as with the California Regional Medical Program, the nursing personnel carry out this rehabilitative measure. With the functioning of a well-organized team, accomplishments gained by one team member are understood and reinforced by the other team members. Helping stroke patients gain mastery of standing balance and ambulation also belongs primarily to physical therapy. These activities might best be regained by the use of parallel bars,[25,35] prosthetic devices such as and/or a brace or a cane that are specifically designed for the patient.[22,25]

In planning home care for the stroke patient undergoing rehabilitation, the physical therapist might visit the patient's home to assess the environment. This assessment can be helpful in detecting physical barriers that are likely to impede home care. Identification of physical barriers can lead to effective modification of the physical environment which should facilitate the continuation of the rehabilitation process at home.[22]

As a means of summarizing the role of the physical therapist considered thus far and to still broaden the scope of this role, the major functions of the physical therapist as outlined by the Joint Committee for Stroke Facilities are included here.

1. Determining functional motor abilities;
2. Ascertaining joint mobility and reasons for limitations of motion;
3. Evaluating the patient for sensory disturbances which may interfere with successful rehabilitative efforts;
4. Instructing the family and patient in the rationale and methods of the treatment program;
5. Initiating a therapeutic program including range-of-motion and strengthing exercises, transfers, wheelchair activities, and ambulation;
6. Working with the nursing staff in the provision of the rehabilitation practices of good patient management; and,
7. Working closely with all other personnel involved in the rehabilitation program and in the formulating and carrying out of an effective and comprehensive plan of care.[32]

The role of the occupational therapist in stroke care has undergone a welcomed change. What was formerly considered simply an organized way of providing diversional activity has dramatically evolved into a means of re-establishing life in the community.[26] By assisting with the recovery of manual skills and mental concentration, the occupational therapist is able to help many patients again perform activities of daily living so that they can resume

self-care at home. Some patients are able to assume more active roles as family members again, and still others have been able to return to the working force. It must be realized, however, that it is not just the occupational therapy, but also the amount of neurological damage and individual motivation that determine how well the patient will be able to perform activities of daily living again.

The activities as outlined by Powell are as follows:

Self-care:	Washing, shaving, use of bath/ wheelchair, dressing, attention to hair/cosmetics, feeding.
Domestic care:	Preparing meals/cooking, household cleaning, washing/ironing, bed-making.
Mobility:	In/out of bed, walking in/out of doors, transferring to bed/chair/ commode, use of wheelchair, stairs, coping with public transport.
General activities:	Reading, writing, use of money, lighting matches.[26]

In addition to actually teaching patients to care for themselves, the occupational therapist engages in muscle testing, strengthening, preventing, and correcting deformities of the upper extremities.[22] The occupational therapist can also reinforce learning that has taken place primarily because of efforts of other members of the stroke team. A more complete list of responsibilities held by the

occupational therapist as a member of the stroke rehabilitation is given by the Joint Committee for Stroke Facilities:

1. Evaluating patients to determine range-of-motion and sensory deficits, and their ability to perform motor tasks, to follow simple instructions, and to utilize retention and recall;
2. Developing a positive program in functional activities and self-care methods;
3. Supplementing limited motor recovery of an upper extremity by teaching one-handed techniques, training in the use of self-care assistive devices and/or adaptive equipment, advising of needed environmental changes, and modifying approaches for successful accomplishment of a specified activity; and,
4. Instructing other rehabilitation personnel and the patient's family in the above techniques.[32]

In addition to these four broad functions, the manuscript compiled by the American Occupational Therapy Association outlines more specific functions that an occupational thereapist might perform as a member of the stroke rehabilitation team. These functions are as follows:

1. Aid patient to adjust to hospital and to his condition.
2. Encourage initiative and motivate toward activity.
3. Determine and maintain good body position.
4. Re-train patient in elevation and ambulation activities.
5. Re-educate patient to perform activities of daily living.

6. Re-train the affected extremities to the maximum capacity.
7. Assist in speech re-training, if necessary.
8. Assist in treating facial paralysis (motivate to do facial exercises through activities, such as story telling, singing, blowing games, etc.).
9. Encourage socialization.
10. Encourage confidence in medical treatment (including P.T., speech, etc.).
11. Recognize need for, and refer to other agencies within the hospital and within the community.
12. Observe and record behavior and performance and make records available.
13. Provide definite and specific means of controlling and grading physical activity -
    a. Teach relaxation when necessary.
    b. Teach coordination of fundamental motor patterns through active assistive then active resistive activities.
    c. Increase joint motion and muscle strength with the aid of supporting slings and adaptive devices when indicated.
    d. Improve physical tolerance.
    e. Improve body function and muscle tone of uninjured as well as injured parts.
14. Aid in adjustment to residual disabilities.
15. Provide avocation and hobby interests.
16. Provide a means of pre-vocational exploration.

17. Correlate O.T. activities with those of the speech therapist if patient is aphasic.[1]

Because the services of a social worker do not seem to be as readily available in small acute care hospitals as are the services of other stroke care personnel, obtaining part-time services of a social worker may be a suitable solution in providing the necessary social services for stroke patients. Another alternative, in the absence of a social service department, might be for one of the other stroke team members to assume the responsibilities associated with this role. A community or public health nurse assigned to the institution has been suggested as the most likely substitute for undertaking the social service activities.[35] The major functions of the social worker as a member of the stroke team are:

1. Assessing the social and psychological needs, home and community adaptations, and economic resources of the patient and his family;
2. Aiding in the case finding (all team personnel should recognize this need and participate in case finding);
3. Performing the customary casework services including initial evaluations, discharge planning, referral to community resources, and assistance in job finding;
4. Attending staff conferences, ward rounds, and other clinical sessions, thereby ensuring close communication between the social worker and all other involved personnel in preparing a comprehensive rehabilitation plan, and,

5. Appraising the physician and other personnel of all social problems that might hinder or prolong recovery.[32]

Cerebral damage due to stroke can cause a variety of speech disorders. "Aphasia is probably the most frustrating and difficult problem for patient and therapist in stroke rehabilitation."[33] Individuals with left brain dominance who sustain neural damage to that side of the brain are frequently in need of speech therapy.[9] As in the case of the Social Worker, the small acute hospital might gain the services of a speech therapist through a part-time arrangement. An alternate solution might be to include an occupational therapist who has received special training in speech rehabilitation, on the stroke team. Regardless of the precise background of an available and qualified individual, the prime responsibilities of the speech therapist include:

1. Evaluating communication problems;
2. Providing consultation to hospital staff, the patient, and/or his family;
3. Suggesting methods of language stimulation to the family; and,
4. Initiating speech therapy when appropriate.[32]

Another professional likely to provide only part-time services to a small hospital stroke program is the psychologist, who may act as a consultant to the stroke team, becoming only directly involved in the rehabilitation of specific patients and indirectly involved in the rehabilitation of other patients. His assistance might be

offered in the following ways:

1. Providing in-depth patient psychological evaluations when required;
2. Providing limited therapy under crisis conditions during hospitalization and,
3. Testing in certain situations, such as determination of organic mental deficit.[32]

In a rehabilitation setting where the investigator was an observer, the psychologist occasionally employed behavior modification techniques to help patients find suitable solutions to problems they encountered as handicapped individuals. The team approach, with its built-in frequent patient contact, seems to lend itself to the effective use of this mode provided that the techniques and goals of a behavior modification program are well understood and fostered by the entire stroke team.

CRITERIA FOR SELECTION OF NURSING PERSONNEL AND STAFFING OF THE STROKE CARE PROGRAM WITH NURSING PERSONNEL AS PART OF THE MASTER NURSING STAFFING PLAN FOR THE ACUTE CARE HOSPITAL

One of the main concerns of this study is the contribution of nursing personnel in the delivery of care to stroke patients in an acute care setting. Considerations about staffing are, therefore, limited to the staffing of qualified nursing personnel.

Staffing of nursing personnel for the purpose of providing quality stroke care would seem to revolve around two main parameters. These two parameters include: first, the qualifications of the individual nursing personnel as members of the stroke team, and secondly, the concern that the actual staffing pattern of the stroke care area must be in synchrony with the general staffing pattern of the study hospital. Each of these parameters will be viewed separately.

According to the role descriptions for team members presented earlier, only nurses possessing knowledge and skills in assessing, planning, implementing and evaluating rehabilitative needs should be selected for participation on the stroke team. Even though little information is provided by the literature in designating specific criteria for staff selection, it would seem that since successful rehabilitation efforts are associated with slow and minute gains, the stroke rehabilitation nurses should be:

1. Attuned to and satisfied with subtle signs of progress in patients.

2. Able to provide positive reinforcement to stimulate and maintain patient motivation toward achievement of appropriate goals.
3. Able to display patience in teaching and practice of necessary skills.
4. Able to establish rapport and good working relationships with patients whose speech may be greatly impaired.

Since strokes are most common in elderly patients, stroke rehabilitation nurses should be:

1. Fond of elderly people.
2. Have an understanding of needs and tendencies of elderly people.

Since the provision of a stroke care program is best attained through team efforts, stroke rehabilitation nurses should be:

1. Able to work well as a member of a goal-directed group.

In order to provide adequate staffing in a special care area within a larger acute care facility, attention must be given to the master staffing plan for the facility. Master staffing plans have been an outgrowth of the study of identified patient and personnel needs in providing quality nursing care. The decrease in the number of hospital nursing programs, the increase in employment of ancillary health personnel and the ever-expanding growth in medical technology have supported the development and use of sophisticated staffing patterns.[10]

Patient census has been the most important index in providing adequate staffing. Energy is now being generated to assign nursing

personnel to patients according to the identified needs of the patients and the preparation and experience of the individual nursing care provider.

Generally, staffing is still based primarily on numbers of patients and numbers of available nursing personnel. Greater strides in matching patients to personnel have been achieved by classifying patients numerically according to the complexity of their needs and predicted hours of nursing care needed to meet these needs.[6 10] A base point of four hours, twelve minutes (4.2 hours) of care per patient per twenty-four hours period has been ulitized in determining nursing manpower.[6]

The individual assigning staff to patients for a specific unit can use these data to more appropriately match patients to nursing personnel with preparation and experience necessary to meet these needs effectively.

In light of the complexity of needs of most stroke patients undergoing a stroke rehabilitation program, and in view of the length of time needed to teach and supervise patient activities, most stroke patients would require maximum possible nursing hours in the master staffing pattern.

DETERMINATION OF THE STROKE PROGRAM POPULATION

Since the population of patients referred for stroke care will naturally vary from institution to institution, an acute care setting must establish a stroke care program that will best meet the needs of its own patient population. Financial considerations must also be cautiously reviewed so that the program provided is economically feasible for the institution as a whole. The quality of care provided through a specialized program such as proposed in this paper is not contingent on the complexity of the program in terms of the special care area and in terms of the latest in sophisticated equipment, but rather the intent is to emphasize the need for comprehensive stroke care provided by the coordinated efforts of a group of skilled people in a setting which provides the basic space and equipment for safe and efficient staff-patient functioning.

Defining the intended recipients of a proposed stroke care program is paramount before establishing the basic program of care. As recommended by Drs. Kennedy and Metts[20], some facilities might limit admission to their stroke care program to patients who have successfully progressed through the acute life-saving stage, which follows many strokes, and who show signs of benefiting from a definitive rehabilitation program. Other acute care settings, particularly small hospitals, might have so few stroke patients that their stroke care programs might include the most acutely ill as well as the more easily classified rehabilitative stroke patient. In establishing a

stroke care program, however, the separation of acutely ill stroke patients from those in the restorative phase limits the total responsibilities of the team so that energies can be devoted more fully to fulfillment of each patient's identified needs. Much time is required both in attending to life-saving needs and to rehabilitive needs. When staff responsibilities are divided between these two post-stroke phases of care, greater conflicts in role performance seemingly arise followed by a greater employment of shortcuts in care which predictably could result in lowered standards of care and slower progress for the patients involved. Most patients engaged in a rehabilitation program must have the necessary time to be taught and re-taught and to accomplish activities by themselves, under supervision, before mastery of skills can safely be achieved. In providing care in the acute stage following a stroke, staff must be ever ready to meet unpredictable emergencies as well as to maintain life-support systems through constant monitoring of patients.

It seems that whenever possible acutely ill stroke patients should be cared for in an intensive care setting where staffing and equipment are geared toward meeting basic life-sustaining needs, and stroke patients in the rehabilitation phase should be placed in a special care area where the efforts of a stroke team can be concentrated on patients' adaptive needs which require re-learning and much practice.

Aside from the acutely ill patient, other patients sustain cerebral damage with resulting paresis or paralysis, but do not seem well suited for the rigors of a stroke care program as proposed

in this study. Dr. Rusk defines this unfortunate population as patients " ... with such severe cardiac damage that they cannot expend the energy required, those with uncontrollable malignant hypertension and those whose brains are so severely damaged that they cannot remember today what they learned yesterday."[34] This statement does not intend to imply that no rehabilitation measures should be employed in the post-stroke care of patients who fit into one of these categories. It does imply that such measures as deemed safe might best be incorporated into their plans of care as carried out in a general or an intensive hospital unit where rehabilitation is not the prime concern. Appropriate rehabilitative measures should be as much a part of the care offered every hospitalized patient as it is for the acutely ill patient and the stroke patient in a definite stroke care program. "Many of the basic elements of a rehabilitation program are part of good general practice and medical care, and should be included in the comprehensive care of patients with heart disease, cancer, and stroke."[17] Particularly, correct and frequent positioning for good body alignment and adequate circulation as well as regularly scheduled range-of-motion exercises are crucial to the prevention of contractures and decubitus ulcers which sometimes occur when patients are restricted to bedrest in order to gain the recuperative powers of rest.

Looking again, then, at the selection of appropriate candidates for a stroke rehabilitation program in an acute care setting, certain criteria have been alluded to and are presented here:

1. Stroke patients who have progressed through the acute life-saving stage.
2. Patients who have no severe cardiac damage that greatly impairs their energy level.
3. Stroke patients who are not also victims of severe hypertension.
4. Stroke patients whose cerebral involvement does not prevent the re-learning of lost skills.

BASIC COMPONENTS OF STROKE CARE

In order to maximize the effectiveness of the efforts of all the individual team members in providing stroke care, a blueprint for team action is mandatory. Identifying the components of basic stroke care and the logical progress from one phase to another in the rehabilitation process should provide such a blueprint. Principles are basic to the production of goal directed activity and provide the rationale for the blueprint. Joint Committee for Stroke Facilities proposes seven principles to guide stroke rehabilitation:

1. To prevent or minimize secondary complications such as contractures, infections (including those from a skin breakdown), or effects of disuse which may interfere with natural recovery of function; the latter may be motor (muscular weakness) or cardiovascular (inability to satisfy the energy requirements associated with standing, walking, or climbing stairs). Consequently, levels of performance demanded be within the limits of current ability and the patient should be protected from damage which may result from an abnormal or inadequate level of function;
2. To compensate for sensory loss which can result in a variety of deficits such as inability to walk effectively or judge whether the body is upright;
3. To encourage social participation and provide the environmental stimulation needed for recovery;

4. To produce the high degree of motivation necessary for successful cooperation in a rehabilitation program. As each patient is different and has his own problems, individualized programs must be designed in order to achieve maximum motivation and results;
5. To substitute for a function either partially or totally lost, once the level of recovery has been estimated or anticipated;
6. To enable independent home living or, if this is impossible, to attain sufficient improvement to permit future care with the least amount of assistance and supervision; and,
7. To achieve, in some cases, sufficient vocational rehabilitation to enable placement in competitive employment or in a sheltered workshop.[32]

With such general guidelines in mind, the stroke team individualizes care for each patient by becoming knowledgeable of each patient's particular rehabilitation needs. As noted in the job responsibilities assigned to each team member, an evaluation is part of each team members' role. These evaluations based on the assessment of strengths and weaknesses through observed patient behavior are shared in regular team conferences. Discussion of the individual findings gathered should lead to a collective awareness on the part of each team member of the status of each patient under treatment:

1. State of mentation.
2. Ultimate total functional capacity.

3. Degree of residual function in areas of deficit, such as speech or paretic limbs.
4. Degree of deficit.
5. Survival and probability of further complications.[32]

With this operational information, about each patient, realistic goals for recovery and the appropriate rehabilitative measures available for use can be determined by the team. The team should meet regularly to re-evaluate goals and measures in light of continually observed patient performance.

When physician approval is given for a patient to take part in an active rehabilitation program, generally the patient is encouraged by the physical therapist to replace passive range-of-motion exercises with active involvement in the same exercises. Additional or alternative programs are used in some rehabilitation programs during this initial phase of treatment. Dr. Hirschberg and associates, for example, require hemiplegic patients under their care to perform bed exercises before attempting any standing exercises.[11]

The exercises fall into three categories according to the degree of difficulty. Naturally the patient is taught to accomplish the simple ones before the complex.

Beginning Exercises:

1. Turn over to the paralyzed side by grasping the side rail.
2. Turn over to the uninvolved side by grasping a low side rail on the mattress edge.
3. Pull up into half sitting or sitting position by grasping the overhead trapeze.

Intermediate Exercises:

1. Turn to either side beyond an angle of 90°.
2. Scoot up and down in bed by grasping the bar at the head of the bed and helping with the neck and the uninvolved leg.
3. Push the paralyzed leg toward the edge of the bed with the uninvolved leg.

Advanced Exercises:

1. Scoot sideways in bed grasping a side rail. The moving is done with the use of leg, neck, and shoulder.
2. Sit up on the edge of the bed, after lifting the paralyzed leg over the edge of the bed.[11]

These exercises are strenuous to the hemiplegic since they are performed by using only one half of the body. Timing is very important so the highest level of success can be attained. Patients should be well rested with three or four sessions properly spaced throughout the day.

Teaching, supervising, and evaluating the performance of these bed exercises may be primarily the responsibility of the nursing staff or the physical therapist but it would seem that here particularly both have a major responsibility for reinforcing the efforts of the other.

In contrast to the approach just described, no such acclamation process is prescribed for patients in the stroke care program at St. Luke's Hospital. Patients are positioned in a chair on the first day of admission to that stroke unit. Timing is an important

factor in both programs. The patient at St. Luke's must be admitted to their stroke program within seven days of a cerebral vascular accident.[35] In contrast, Dr. Hirschberg's program for stroke patients seemingly does not have such restricted admission requirements. It seems safe to assume that many of the patients in his program have predictibly, sustained cerebral injury much earlier than seven days pre-induction, to the program. With an increasing lapse of time between the cerebral injury due to a stroke and the rehabilitative treatment, the greater the likelihood of hypotensive episodic as well as the increased risk of the occurrance of other compounding difficulties such as contractures, which judiciously prevent as liberal a use of chair setting so early in a stroke care program.

Returning to the conservative approach to stroke rehabilitation, facility in doing active bed exercises and/or active range-of-motion exercises should be followed by patients gaining mastery with standing balance and transferring from bed to wheelchair. These activities are usually introduced to the patient by the physical therapist and reinforced thereafter by both physical therapist and nursing staff. The use of a sliding board or belt has been found most helpful in accomplishing transfers when standing balance is poor.

As soon as a patient can safely assume chair sitting with help, he should be assigned to an appropriate wheelchair from which he can more easily become actively involved in his own rehabiliation.

Ambulation, tranfer training, and an exercise program to strengthen paretic muscles should all be provided concurrently.[32]

Shoes which provide a broad base of support and traction are of paramount importance for safe ambulation. Ambulation is frequently started by navigation through parallel bars. The amount of independence achieved in walking through the bars gives an indication of what means might be employed in promoting greater ambulatory independence. A cane or a walker can be very helpful to many patients, but a certain amount of strength in the involved extremities and appropriate proprioceptive input must be received by the extremities in order to maintain balance in walking with a cane or walker.[32]

Bracing may also be a useful adjunct to independent ambulation by providing dosiflexion of the foot when the patient is unable to do so on his own. The stroke patient with good balance and strength can frequently be taught some navigation up and down stairs.

Many patients may still need some walking assistance. The gait the rehabilitated stroke patient is ultimately able to master varies with the degree of neurological damage, the level of his motivation, and the caliber of individualized instruction provided by the stroke team.

For a good number of stroke patients, wheelchair independence is a respectable goal. Waglonis reports that fifty percent of the patients admitted to stroke rehabilitation programs can walk out of the institution.[41] Of the fifty percent remaining, many probably were wheelchair candidates. Covalt suggests that ten percent of patients undergoing a rehabilitation program cannot be taught ambulation.[7] Here again, if ambulation is not possible, wheelchair

independence is the next best goal toward which rehabilitation efforts would be directed. Such independence can provide a certain amount of freedom otherwise not attainable with paretic or paralyzed extremities. Guidelines for proper wheelchair selection and safety precautions are included under equipment.

Restorative exercises are incorporated into the rehabilitation program to provide re-education of muscles and/or to stimulate spontaneous recovery.[32] Concentration of muscle re-education on proximal muscle groups usually proceeds distal muscle group re-education. Bucholz states that the progression follows an "education character". Initially single muscles on single muscle groups are exercised, then later more complicated combined movements are promoted.[3] In one setting, the investigator observed organized "mat classes" during which groups of patients learned and practiced complex exercises.

As stated earlier, many stroke patients are able to perform activities of daily living besides ambulation, through organized team efforts. Practice in dressing, hair combing, eating and brushing one's teeth are all activities particularly emphasized by the occupational therapist. Certain skills, such as grasping, tying and writing can be taught by using assistive devices and are usually incorporated into daily occupational therapy sessions. Teaching certain skills and evaluating the learning of other skills is particularly appropriate during mealtimes and during bathing and toileting periods throughout each day. Both nursing and occupational therapy share primary responsiblity for these activities since they are the team members working with patients during these times.

Another area of concern, particularly for the occupational therapist, is the preparation of patients to assume responsibilities that they will resume at home. Depending on the patient's gender and role preferances, activities requiring muscular coordination necessary for cooking, handicrafts, shaving, and bed-making may be emphasized.

The basic stroke care program as outlined so far has indicated the need for a heavy emphasis on re-training or re-teaching of skills most generally taught by the physical and occupational therapist. Nursing has been frequently mentioned as playing a reinforcing role in helping patients gain and maintain these skills. Nursing has a much broader role than this in providing comprehensive stroke care. It is a nursing function to assess patients' needs, to make nursing diagnoses based on collected data, to devise nursing care plans, to implement appropriate nursing interventions and to evaluate the effectiveness of the plans in light of patients' responses. For nurses involved in stroke care, the use of the nursing process is of paramount importance particularly in gaining the confidence and cooperation of stroke patients and in determining the judicious use of rehabilitative nursing measures. A more specific view of the role of rehabilitation nurses has been outlined under in the section under the team approach to stroke care.

A program routine is important to the provision of continuity of care. In one stroke care facility where the investigator was an observer, an average day for the stroke patients followed this pattern:

7:30 - 8:00	Patients were awakened then proceeded with dressing, transfer to wheelchair, toileting, grooming. Nursing and occupational therapists assisted and/or supervised.
8:00 - 8:30	Breakfast was served in an activity room to patients in their wheelchairs. Nursing and occupational therapists assisted.
8:30 - 12:00	Occupational and physical therapy sessions were held. Patients had one-half hour of each. Occupational therapy in group setting with individual attention was given to each patient. Physical therapy was provided on a one-to-one basis with a therapist. Individual programs were conducted for each patient. Exercises included mat exercises for muscle strengthening, practice in sitting or standing balance, practice of transfer techniques, and ambulation practice. Before and after therapy sessions, patients conversed or performed other recreational activities in the day room. Bathroom breaks were taken at any time with nurses on hand to assist.
11:00 - 12:00	Patients were assisted to bed for rest break or continued recreational activities. Nursing and occupational therapy assisted.
12:00 - 12:30	Lunch was served in activity room.

12:30 - 3:00	Therapy sessions - same as above.
3:00 - 5:00	Rest or recreational period.
5:00 - 5:30	Dinner.
5:30 - 10:00	Recreation.
10:00 - 11:00	Preparing for bed.
11:00 -	Lights out.

Physicians made their rounds usually in the morning of each day.

A staff conference was held once each week to review progress of patients, to up-date approaches, and to make discharge plans.

Relatives were welcomed at any time during patient waking hours, and were taught essentails of care so that they could help patients make easier home adjustments.

SELECTION OF A SUITABLE PHYSICAL ENVIRONMENT

Owing to the relatively slow process of recovery and to the high cost of care provided by a team of health workers, rehabilitation is a costly part of medical care. Unfortunately, the length and cost of rehabilitation increases when it is started in earnest only after decubitus ulcers have been permitted to form, contractures are present, muscle strength is not preserved, and motivation for cooperation in care has dwindled to a very low level.

As mentioned earlier, the task of any medical facility providing care for patients is to provide the best care possible. Basic to best efforts is a suitable environment. The literature offers little assistance in defining what constitutes a suitable environment for stroke patients. It seems reasonable, however, to assume that the three components of healthful living, work, rest, and recreation must be taken into consideration in designing a program and in determining physically where the program will be carried out. Additional requirements of the physical setting would be determined by the peculiar character of stroke rehabilitation.

According to the recommendations made by the Joint Committee for Stroke Facilities, "Every hospital accepting stroke patients should have a separately designed area properly equipped for rehabilitation."[32] This "separately designated area" may take one of two forms; stroke patients may be totally segregated from other medical or surgical patients by placement in a structurally separate stroke care unit[20 23 35] or may be partially segregated through

placement in a specified section of a larger hospital unit. The latter was the situation in one hospital visited by the investigator. When partial segregation is the plan selected, the designated stroke care area might include a therapy area (work) and sleeping quarters (rest) and a recreational area which could be shared by all patients on the unit.

In one of the observed units where the stroke care program had been only newly initiated, a vacant room was used for therapy. As much as possible stroke patients were assigned together in specific rooms. Provision of a recreational area was part of the future plans for the evolving stroke care program.

Needless to say, pros and cons exist to either degree of segregation utilized in providing a suitable environment for stroke care. It is not within the scope of this paper to discuss the positive and negative aspects of each approach. The decision regarding the most appropriate structural setting would have to be made by each health care facility in light of patient census and available staff and allotted funds.

Certain physical requirements are basic to the environment where the team approach is applied to stroke care. These requirements include: an adequate number of beds and space for sleeping quarters, an area in which occupational and physical therapy can be carried on, and a sufficient number of bathrooms equipped with special toilets and bathing aids.[32]

Other space requirements might include conference rooms for private interactions among patients, staff, and families. A large

dining room can provide a more normal atmosphere by emphasizing eating as a social experience. This dining area can double as the therapy room in order to conserve expense and to get as much use as possible out of the available space.

SELECTION OF APPROPRIATE EQUIPMENT

Once the decision is made as to the type of stroke care area most feasible for an acute care hospital, attention must be given to the acquisition of equipment necessary in providing the stroke care program. One of the most important tasks in setting up a stroke care area is the careful selection of beds. The number of beds required should be determined by predicted census for the stroke care area. Great care should be taken to assign patients to beds according to the side of major involvement. The patient's affected side should be next to the wall so that environmental stimuli are received on the unaffected side which is best able to respond to the stimuli.[9] Provisions for extra beds with adequate space between them or alternate room arrangements should help solve accommodation problems when more right (or left) hemiplegics are admitted to the regularly arranged area which would then not offer all of them proper bed placement.

The bed itself " ....should be firm enough to support the body in good alignment when the patient is lying down and to provide a base of support for the patient to move about in bed."[16] Siderails are commonly used in hospitals to protect patients from falling out of bed. For the stroke patient, a short siderail, less than one half the length of the bed,[16] can be a very useful aid in getting in and out of bed.

Footboards that adapt to individual height are crucial in preventing footdrop. Two simple patterned footboards, with directions

for construction can be found in Rehabilitative Nursing Techniques-2, a guide from the Kenny Rehabilitation Institute.[16]

A trapeze strategically placed over the head of the bed can be another assistive device that, when properly used, promotes muscle strengthening and freer activities for stroke patients.

Not only do beds for stroke patients need to be properly equipped, but they also need to be of a height that permits safe access in and out of bed. High-low beds placed at the low level can be permanently maintained at that level to facilitate safe transfers.

Imbeded in the philsophy of rehabilitation is the goal to assist debilitated patients regain as much independence as possible. One of the best signs of progress and strong facilitator of self-care is a means of mobilization. In a rehabilitation program then, the bed should be viewed only as a place of rest. The stroke patients' activities should not be based around his bed as characteristic of other hospital patients. Instead, his therapy and rest periods should revolve around his recreational periods in the day room.

With this strong emphasis on mobilization, it is no wonder that much of the stroke rehabilitation equipment consists of ambulatory aids. A variety of these aids can assist in tailoring the stroke program to meet the needs of each patient as he progresses toward more independent functioning.

The most basic means of safe mobilization for most stroke patients is by wheelchair propulsion. In one hospital where the investigator was an observer, each stroke patient was assigned to

a wheelchair on the day of admittance to the stroke care unit. A sturdy seat belt was applied to prevent forward falls. The patient was then given instructions and practice in self-propulsion and, as soon as he was able to understand and coordinate the activity involved, he was able to pilot himself around the unit. In providing wheelchairs for stroke patients, it is not enough simply to have the proper number of wheelchairs. As with beds, the wheelchairs must be assigned in accordance with the particular needs of the patients. Improper size is the most frequent mistake in assigning or selecting a wheelchair.[14] In assigning patients to wheelchairs, consideration must be given to patient comfort as well as to the provision of a vehicle which structurally permits cooperation in the rehabilitation process. Proper wheelchair selection is of even greater importance to those patients who realistically will be confined to a wheelchair on a permanent basis because little muscle activity for strengthening remains.

According to Dr. Kamenetz, adult size wheelchairs are oversized for many patients. Junior sized wheelchairs should be used instead. Ten percent of the wheelchairs used in chronic disease hospitals and extended care facilites should be of the junior size.[14] It seems reasonable, then, that an acute care hospital with a stroke care program must also look at the size of the wheelchairs to be used by patients in the program. The ten percent figure might be utilized in determining how many junior sized wheelchairs might be needed for the predicted program census. In addition to having an appropriate number of proper sized chairs, concern also must be given to the

specific features that these wheelchairs have. The standard rear-wheel-drive chair can be propelled by using one hand and one or both feet.[14] This type of chair would seem most suitable for mobilization of the hemiparetic or hemiplegic stroke patient. Stroke patients who have other special problems as a single or double amputation have different needs and require special types of wheelchairs which provide better balance in accord with their particular weight distribution. Such special wheelchairs might be borrowed or rented rather than purchased unless the need for these special wheelchairs is a frequent need.

Parallel bars are standard equipment for physical therapy departments. For stroke patients in a program, the therapy area should be equipped with its own parallel bars. These bars are of simple construction. Usually, adjustment of the height of the bars is the only modification necessary to suit different patients using them.

Progress in ambulating from the parallel bars to a less limited space and with less support often can be achieved by proper use of a cane or walker. The physical therapy department of Rancho Los Amigos Hospital recommends an assortment of canes. Quadriped cane, "Ortho-cane," standard cane, and forearm crutch are used in their particular rehabilitation program.[28] According to the limited observations of the investigator, a preferance for the wide-based quadriped cane has been noted.

When bilateral lower extremity weakness is present, use of a walker may be necessary before balance can be gained and maintained

with a cane. Again canes and walkers come in many styles and purchase should be based on identified need rather than idle guessing. Before exact needs are well defined, such equipment might be rented.

Many of the materials employed, particularly the occupational therapist, in teaching patients to care for themselves are relatively easy to acquire and/or less expensive as compared to most of the rehabilitative equipment mentioned above. In teaching patients to dress themselves, the patient's own clothes and shoes are used. Sometimes families have to provide new items of apparel because the shoes and garments worn in the pre-stroke period are unsafe, too. constrictive or do not modestly cover the patient when exercising. Sometimes stroke patients have to make an adjustment to clothing that they are not in the habit of wearing. One example, noted by the investigator, is the clothing of elderly women in pants and blouses when they have traditionally worn dresses. Hopefully, when such a change is introduced, the desire for greater independence in dressing and mobilization will exceed the personal desire to wear a familiar type of apparel. Looking again at other equipment, the occupational therapist can employ a variety of inexpensive games and "toys" for muscle testing, strengthening, and use training. "Hand splints are necessary whenever the wrist and fingers cannot adequately be supported by the voluntary muscles, as is true in the large majority of cases."[22] A supply of commercially manufactured right-and-left-hand splints would thus seem to be an important purchase for a stroke rehabilitation program in an acute case setting. Some of these splints might be developed by modifying or synthesizing

supplies already in the hospital inventory.

There are also numerous adjustive devices, such as eating utensils with elongated or built-up handles, raised toilet seats, and wheelchair trays which also can be improvised or purchased to aide patients in the regaining of independence. Catalogs are available from manufacturers who specialize in the production of this type of equipment.

Two such catalogs were in use by the study hospital. The names and addresses of the manufacturers are included in the bibliography.[5 12]

With the benefit of time and experience in implementing and budgeting a stroke care program, a facility might invest in a greater quantity of commercially prepared therapeutic aids.

CHAPTER III

REPORT OF THE STUDY

Introduction

Following the eight point literature review, a medical record review was conducted to obtain information about stroke patients and the care they received in the study hospital. The study sample was limited to stroke patients admitted and treated during January, 1972 through May, 1972. The data collected was relevant to:

1. The total number of patients and admissions recorded during the specified five month interval.
2. The origin or type of stroke diagnosed.
3. The age and sex of the patients.
4. The length of hospitalization.
5. The discharge destinations.
6. The hospital units where care was given.
7. The performance of range-of-motion exercises by nursing personnel on those units.
8. The inclusion of occupational and/or physical therapy in the treatment program.
9. The consultations given by other physicians.
10. The assistance provided by the visiting nurse coordinator assigned to the study hospital and the use of other community resources.
11. The use of occupational and/or physical therapy on an outpatient basis.

Tabulations were made of the data collected. Conclusions were drawn from the data tabulated and used as a second guide in planning the stroke care program for the study hospital.

Data Gathered From The Medical Record Review:

TABLE 1

Numbers of Patients and Admissions

During January, 1972 through May, 1972

Number of Patients		Number of Admissions		
55	x	1	=	55
8	x	2	=	16
1	x	3	=	3
64 Total Number of Patients				74 Total Number of Admissions

During the five month interval, the data revealed that sixty-four patients were admitted with a diagnosis of stroke or with symptoms directly related to stroke. Of those sixty-four patients, fifty-five had single admissions, eight patients were hospitalized twice for stroke or related symptoms and one patient was admitted three times for stroke. Altogether, there were seventy-four admissions for the sixty-four patients in the study population.

TABLE 2

Diagnostic Categories Relating Origin or Type of Stroke to 74 Patient Admissions During January, 1972 Through May, 1972

Diagnostic Category	Number of Patients
Thrombus	26
CVA	23
Hemorrhage	11
Stroke of Undetermined Origin	6
Ischemia	3
Embolism	2
Left Cerebral Arterial Spasm	1
Infarct	1
Dizziness	1
	74 Total Number of Patient Admissions

The origin or type of stroke associated with the seventy-four patient admissions was then examined. According to the data, the greatest number of strokes was due to the formation of a thrombus in a cerebral artery. This diagnosis appeared on twenty-six patient charts. The second highest number was recorded for the diagnosis of cerebrovascular accident (CVA) with twenty-three in this category. With CVA being a less well defined diagnosis, it would seem that this category might have been eliminated had more specific diagnostic methods been employed. The diagnoses of these twenty-three patients might then have been tabulated under one of

the more well defined categories. Hemorrhage ranked third as a cause of stroke in the study population. There were eleven patients with this recorded diagnosis. Stroke of undetermined origin was next, with six recorded diagnoses in this category. Again, with more defined diagnostic methods, this category might conceivably have been eliminated as well. Ischemia appeared as the diagnosis on three charts. The occurrance of transcient ischemia attacks is generally included in a discussion of stroke origin; however, patients with this diagnosis should not have residual paresis or paralysis necessitating rehabilitation unless the attacks culminate in a completed stroke. Patients may or may not be admitted to a hospital for observation and treatment of transcient ischemic attacks. It is interesting to note that one of the patients with cerebral ischemia was hospitalized for fifteen days and was discharged home having had no therapy nor consultations. A second patient was admitted for four days and received some physical therapy before discharge. The third patient with ischemia was readmitted with ischemia three days after discharge following a stroke. During neither of these two hospitalizations was any therapy provided nor consultations given.

Embolism ranked sixth as a cause of stroke in the study population with two patients in this category. Single entries were made for three patients under three separate stroke related problems. These diagnosis included: left cerebral arterial spasm, cerebral infarct, and dizziness.

Considering the data collected in the medical record review

on origin or type of stroke, it would seem that a sharper focus on stroke diagnosis might be a goal of the medical practitioners responsible for the admission and treatment of stroke patients in the study hospital. The implementation of a stroke team approach to care, with a medical supervisor skilled in stroke diagnosis, would provide a better means of collecting such important basic to the derivation of individualized treatment plans for the stroke patients.

TABLE 3

Age and Sex of 64 Patients Admitted for Treatment of Stroke or Related Cerebrovascular Problems During January, 1972 Through May, 1972

Age	Number of Patients	Sex Male	Sex Female
0 - 20 years	1	1	0
21 - 30 years	0	0	0
31 - 40 years	1	0	1
41 - 50 years	1	0	1
51 - 60 years	2	0	2
61 - 70 years	11) 89% of	7	4
71 - 80 years	27) the study	14	13
81 - 90 years	20) population	5	15
91 - 100 years	1	0	1
	64 Total Number of Patients	27 Total Number of Males (42%)	37 Total Number of Females (58%)

The next area considered in the chart review was related to age and sex of the sixty-four patients admitted and treated for stroke. Among the sixty-four patients there was a wide range in ages, but the occurrance of stroke was overwhelmingly directed toward patients between sixty-one and ninety years of age. Eighty-nine percent of the study population in this sample were between these ages. In determining the sex of the sixty-four patient's charts studied, there was a greater preponderance of females than males. There were thirty-seven females (58 percent) and twenty-seven males (42 percent). On the basis of these data, no definite conclusion can be made about the sex of the stroke patients who might become beneficiaries of an organized stroke care program. One might expect, however, that generally there would be more females than males admitted for treatment and that age-wise most of the patients would be older than sixty-one years of age.

TABLE 4

Length of Hospitalization Recorded for
74 Patient Admissions During
January, 1972 Through May, 1972

Number of Days	Number of Admissions
1 - 10	32
11 - 20	25
21 - 30	11
31 - 40	5
41 - 50	0
51 - 60	0
61 - 70	0
71 - 80	1
	74 Total Admissions

Length of hospitalization is another area of concern in providing comprehensive stroke care. Data from the medical record review revealed that the greatest number of patients were hospitalized for a period of one to ten days. Thirty-two patients were included in this category. Twenty-five patients were hospitalized between twenty-one and thirty days. Five patients stayed thirty-one to forty days and one patient was hospitalized for seventy-seven days. It is interesting to note that the seventy-seven days hospitalization was the second hospitalization during the identified interval for an eighty-three year old female. The first admission was for cerebral infarct; the second for dizziness. During neither of the hospitalizations was there any therapy or consultations provided.

In examining the data relative to length of hospitalization for

the study population, the data seem to be a relatively poor indicator of how long patients undergoing a comprehensive stroke program might be expected to stay, aside from the fact that ninety-two percent of the seventy-four admissions were for periods of time from one to thirty days. A treatment program implemented by a stroke team might shorten or lengthen hospitalization periods indicated in the record review because of the multi-disciplined approach to identification and treatment of patient problems.

TABLE 5

Discharge Destinations Following 74 Admissions for Stroke or Related Cerebrovascular Problems During January, 1972 Through May, 1972

Discharge Destination	Number of Patients
Home Return	28 - 38% of total Patient Admissions
Extended Care Facility	20 - 27% of total Patient Admissions
Rehabilitation Center	4 - 5.3% of total Patient Admissions
Other Hospitals	4 - 5.3% of total Patient Admissions
Home of Family Member	1 - 1.4% of total Patient Admissions
Deaths	17 - 23% of total Patient Admissions
	74 Total Patient Admissions

Providing appropriate discharge arrangements is of primary importance in the recovery process of stroke patients. The major goal of stroke rehabilitation is to eliminate or minimize a patient's deficits through therapy so that he/she can live as near normal a life as possible. To return the patient to his/her home as soon

as possible is always the most desirable discharge arrangement. Extensive cerebral and extremity impairment or lack of available assistance in a home setting may necessitate placement in an extended care facility until greater recovery gains are achieved. When viewing discharge arrangements in total, mortality due to stroke, must also be considered. As noted in the review of the literature, many patients do not survive the effects of a massive stroke and expire in the immediate post-stroke period.

The medical record review provided important information about the discharge destinations and expirations for stroke patients in the study sample.

The seventy-four admissions were followed by eight different discharge arrangements, including expirations. The greatest number of patients, twenty-eight, were discharged home. Care for twenty of the patients continued in an extended care facility. Four patients were transferred to facilities specializing in rehabilitative treatment. Four hospitalizations were succeeded by care in another hospital with one of the three patients being sent to an established stroke care unit within one of these hospitals. One patient returned to the home of a relative. And there were seventeen hospital deaths recorded among the patients in the study sample.

Aside from the twenty-three percent mortality rate, discharge arrangements were relatively favorable for the stroke patients. The number discharged home (38%) is particularly remarkable. The data, however, do not reveal how well the patients were able to function in their homes. The amount of assistance necessary for

adequate functioning of patients in the other hospitals, the rehabilitation facilities, and the home of a patient's relative was also not a determinable factor in evaluating the appropriateness of the selected discharge arrangements.

No focus on temporary placement in the extended care facilities was noted.

The twenty-three percent mortality rate was lower than the fifty percent mortality rate associated with other stroke care programs cited earlier.

Proponents of an organized stroke care program would strive to maintain this relatively high home return. In addition, they would also seek means of providing temporary assistance in extended care facilities for some patients with slow progress instead of the more indefinite arrangements made for extended care. Some patients will probably always be sent to other hospitals because of proximity of patients' families to other hospitals, because of particular health insurance coverage, personal preference, and/or because of more refined diagnostic or treatment measures available elsewhere than in the study hospital. It would seem, however, that with an organized stroke care program in the study hospital, no patients should have to be sent to another hospital with a similar stroke care program. No decrease in the mortality rate can be expected until better approaches to care emerge through medical research.

TABLE 6

Units of the Study Hospital Where the 64 Patients with Stroke or Related Cerebrovascular Problems Received Care During the 74 Hospital Admissions

Unit	Number of Admissions
ICU - Medical-Surgical	6
Long-term Psychiatric	3
Medical Unit	38
Orthopedic Unit	1
Surgical Unit	1
Medical-Surgical Unit	21
Medical-Surgical Unit	14
	84 Total Admissions

*Ten patients were admitted to one unit but transferred to another unit during their hospitalization.

During the seventy-four admissions for the sixty-four patients, care was given by nursing personnel on seven different units. Most patients were treated on one unit but ten patients were transferred to another unit during some period of their hospitalization. Three of the four transfers were to or from the hospital intensive care unit. The remaining five transfers were from one general unit to another.

By far the greatest number of patients, 38 of the 84 admissions, were treated on the main medical unit of the hospital.

Two other units in the study hospital which characteristically provide medical care were also identified as providing care for some of the stroke patients in the study hospital. Twenty-one admissions were recorded for another medical-surgical unit with fourteen admissions for the third medical-surgical unit. Six admissions were recorded for the medical-surgical intensive care unit. Three admissions were recorded for the long-term psychiatric unit and one admission each was recorded for the orthopedic unit and the major surgical unit.

An organized stroke care program would probably limit the number of hospital units utilized to provide stroke care. Only those patients requiring life-saving care would be sent to the intensive care unit. All other patients would be cared for primarily in the identified stroke care area with special services provided by consultants coming to the patients rather than patients going to other areas for specific aspects of their treatment.

TABLE 7

Performance of Range-of-Motion Exercises by Nursing Personnel During 74 Hospitalizations from January, 1972 Through May, 1972 According to Number of Patients and Frequency of Exercises

Number of Patients	Frequency of R.O.M. Exercises
2	Once a shift
7	Occasionally or once a day
9 Total Patients Exercised	

Range-of-motion exercises are basic to the recovery of muscle strength in paretic or paralyzed extremities. Nursing personnel are frequently directed by physician order to perform such exercises with debilitated patients. Generally, most nursing programs include instruction in the proper execution of range-of-motion exercises. The data revealed some surprising findings regarding performance of range-of-motion exercises by nursing personnel assigned to the s tudy patients. Performance of range-of-motion exercises by nursing personnel was recorded as part of treatment given to only nine patients during the seventy-four hospitalizations. Among the nine patients, only two patients had range-of-motion exercises performed by nursing personnel once a shift, around the clock. The remaining seven patients received the benefit of these exercises occasionally during their hospitalizations or at best once a day. Considering the importance of a regular program of range-of-motion exercise being initiated or reinforced by nursing personnel, the information collected in this study is far from meeting such an objective. A number of factors, not explored in the study, might have contributed to the paucity of recorded range-of-motion exercises. Attending physicians may not have ordered the exercises, nursing personnel may not have carried out physician orders for the exercises, or nursing personnel may have performed the exercises based on nursing judgment or physician orders but simply did not record their actions. Irrespective of the actual reasons for the findings, it would seem that with the implementation of a team approach to stroke care that the use of

range-of-motion exercises would sharply increase and provide greater benefit to patients in the stroke care program.

TABLE 8

Use of Occupational and Physical Therapy
During 74 Hospitalizations for Stroke
From January, 1972 Through May, 1972

Type of Therapy	Number of Patients Receiving Therapy
Occupational Therapy	0
Physical Therapy	30

The seventh area considered in the chart review was the recorded use of inpatient occupational and/or physical therapy. During none of the seventy-four admissions was occupational therapy utilized. Less than one-half, thirty patients, had any form of physical therapy. The physical therapy programs varied in the use of treatment modalities. Assistance given these thirty patients by the physical therapist was relative to one or more of these modalities: range-of-motion exercises, electrical stimulation of muscles, Hubbard tank, or ambulation training.

An organized stroke care program in the study hospital should increase the scope of the physical therapist's activities, particularly in the areas of assessment and evaluation. Although results of the physical therapy programs were not evaluated, it would seem that a team approach to stroke care would magnify the benefits of physical therapy to patients because of the more systematic, reinforced efforts of the stroke team.

Since occupational therapy was not included as part of the treatment program for any of the stroke patients in the study sample, use of this type of therapy would be an added dimension to the treatment programs of stroke patients in the study hospital.

TABLE 9

Consultation Services Provided During the 74 Patient Admissions

Consultations	Number of Patients Receiving Services
Internal Medicine	7
Neurosurgery	7
Neurology	7
Urology	2
Orthopedics	2
Psychiatry	1
	26 Total Number of Consultations

*Five patients were seen by two consultants.

Consultations given to the stroke patients by other physicians was another area explored in the medical record review in order to better understand the breadth of existing stroke care programs. During the seventy-four patient admissions, six types of consulting services were provided. There were twenty-six consultations made. Five patients were seen by two consultants. Consultations were given by specialists in these areas: internal medicine, neurosurgery, neurology, urology, psychiatry, and orthopedics.

No attempt was made to find out what specific recommendations were made or carried out. The intent of this phase of the data collection was to determine if physicians were seeking the guidance of other physicians in the planning of care for their stroke patients.

With the implementation of a team approach to stroke care, the number of consulting services may be maintained, increased, or reduced in accordance with the resources available within the stroke team itself.

TABLE 10

Use of Visiting Nurse Coordinator (VNC) Services and Community Resources in Providing Extended Care Following 74 Hospitalizations from January, 1972 Through May, 1972

Number of Patients Receiving Services	Nature of Service Provided
25	Transferred to Extended Care Facility through VNC
2	Home Care through VNC
1	Home Care by Private Duty Nurse
28 Total Number of Patients Receiving Services	

Following in close proximity to the assistance of physician specialists in providing a comprehensive program for stroke patients is the assistance of community nursing resources. The study hospital has the benefit of a full-time visiting nurse coordinator.

According to the data, during the seventy-four hospitalizations, visiting nurse coordinator services facilitated twenty-five patient transfers to extended care facilities. In addition, coordinator efforts prompted the use of home health services for two patients who were discharged to their homes. Services in the home of one other patient were provided by a private duty nurse. No assistance from the visiting nurse coordinator was solicited in setting up this particular home care arrangement.

In light of this minimal data collected from the medical record review, it would seem that the visiting nurse coordinator might generally assume a much broader role in working as a member of a stroke team and specifically in providing support personnel who would reinforce the continuation of treatment plans in patient homes. The visiting nurse coordinator would continue, but hopefully less frequently, to assist patients, families, and the stroke team in the determination of suitable extended care arrangements for patients who are unable to function at home without close supervision and guidance.

TABLE 11

Outpatient Services Provided Following 74 Hospitalizations During January, 1972 Through May, 1972

Number of Patients Receiving Services	Nature of Services Provided
Occupational Therapy	0
Physical Therapy	8
	8 Total Number of Patients Receiving Services

Dovetailing the use of home health services and the continuation of care in an extended care facility is the consideration of outpatient services for patients discharged home. Following only eight of the seventy-four hospitalizations were such services utilized and them only for physical therapy. Many patients discharged to extended care facilities probably had such services continued in those settings, but the investigator wonders if more patients transferred to extended care facilities might have been able to return home had services of an occupational and/or physical therapist on an outpatient basis been considered.

With the implementation of a team approach to stroke care, it would seem that new avenues might be opened for home care with the result that placement of patients in extended care facilities might be substantially reduced.

THE STROKE CARE PROGRAM

The stroke care program, designed for the study hospital, represents a synthesis of information collected by the investigator. Data gathered from the literature, provides the basic structure on which the program is built.

Consideration of eight areas was identified as necessary to the establishment of a comprehensive stroke care program. The literature review provided an exploration of the eight areas identified as:

1. Existing stroke care programs.
2. Definition of the team approach to stroke care.
3. Determination of appropriate health care providers and their respective roles as team members.
4. Criteria for selection of nursing personnel as part of the master nursing staffing plan for the study hospital.
5. Determination of the stroke population.
6. Basic components of stroke care.
7. Selection of a suitable physical environment.
8. Selection of appropriate equipment.

The task of designing a stroke care program suited to the study hospital was attempted by considering again the eight areas explored in the literature review and by relating to that information the pertinent findings gathered from the medical record review and from the observed, verbal, and experiential data collected by the investigator.

EXISTING STROKE CARE PROGRAMS

Acute care hospitals were cited as legitimate providers of a comprehensive stroke care program since many patients are reportedly admitted to acute care hospitals for stroke care.[47] The study hospital had seventy-four recorded admissions for stroke or related cerebrovascular problems during the five month interval considered in the medical record review. On the basis of these recorded admissions, the study hospital qualifies as a legitimate provider of stroke care.

When consideration is given to the stroke care presently provided by the study hospital, the medical record review findings indicate some tendencies in the care which could be converted to more comprehensive care with the implementation of an organized stroke care program.

The present tendencies found are as follows:

1. Diagnosis of the cause or origin of stroke is vague.
2. Patients are cared for on predominantly anyone of three medical or medical-surgical hospital units.
3. Nursing personnel give relatively little attention to the need for range-of-motion exercises in stroke care.
4. Physical therapy is not particularly an integral part of stroke care.
5. Occupational therapy is an untapped form of treatment for stroke patients.
6. Attending physicians work in relative isolation of one

another in diagnosing patients and in planning stroke care.

7. The role of the Visiting Nurse Coordinator is limited primarily to assisting with discharge arrangements for stroke patients to extended care facilities.
8. Occupational and physical therapy on an outpatient basis is used very little.

With the implementation of an organized stroke care program, these tendencies in stroke care should appear:

1. Diagnosis of the cause or origin of stroke would be better defined. Particularly, the collective skill of the team members in evaluating patients' deficits would promote greater clarity.
2. Patients would be cared for in predominately one localized stroke care area.
3. Nursing personnel would incorporate range-of-motion exercises as a part of the basic care for stroke patients.
4. Physical therapy would become an integral part of care for every stroke patient, evaluated as needing it.
5. Occupational therapy would become an integral part of care for every stroke patient, evaluated as needing it.
6. The medical director of the stroke team would assume major responsibility for the rehabilitation of stroke patients. The director would have the freedom to solicit the services of other medical and nursing specialists as well as receive the cooperation of attending physicians in carrying out the individual rehabilitation programs.

7. The role of the Visiting Nurse Coordinator as a member of the stroke team would be expanded to include the provision of greater home services to discharged stroke patients.
8. Occupational and physical therapy on an outpatient basis would foster the continuation of treatment plans following discharge from the hospital.

THE APPROACH TO STROKE CARE

As attested to in the review of the literature, the team approach to stroke care provides an excellent means of channeling efforts of a multi-disciplined group toward achievement of maximum rehabilitation of stroke patients. The team approach would be adapted by the study hospital as part of the stroke care program.

The stroke team would be comprised of these essential members:

1. Physician-Medical Supervisor
2. Nurses skilled in stroke rehabilitation
3. Nurse Coordinator
4. Physical Therapist
5. Occupational Therapist skilled in speech therapy
6. Visiting Nurse Coordinator

DETERMINATION OF APPROPRIATE HEALTH CARE PROVIDERS AND THEIR RESPECTIVE ROLES AS TEAM MEMBERS

The medical director for the stroke team would be selected from among the present medical staff, if a physician with training in stroke rehabilitation were available and were willint to assume the role of medical director. At least two internists on the staff have expressed interest in an organized stroke care program. If no qualified staff physician could be found, then hospital administration would recruit a qualified physician to fill the role of medical director. In the event that recruitment were necessary, these efforts would be directed toward filling the role of the medical director with a physiatrist or a neurologist. Because of the

nature of the specialized training received by a physiatrist or a neurologist, either specialist would be ideal, as the medical director for the stroke team.

Three nurses employed by the study hospital have taken a stroke rehabilitation course. The services of these three nurses would be solicited in the implementation of the stroke care program. One or more of these nurses might become members of the stroke team depending on personal preference and current role status in the study hospital. Two of the nurses are head nurses; the other is an assistant head nurse. Services of these nurses should at least be employed in educating other nursing personnel interested in becoming stroke team members.

In order to meet the demand for skilled nursing personnel to implement and maintain the stroke care program, the nursing staff as a whole would be polled to find individuals who hsve had rehabilitation training and/or experience or who would like to become qualified implementors of the stroke care program. Depending on the results of the poll, some kind of educational experience for interested staff would probably be warranted. One alternative would be to have an inservice program offered by the presently employed rehabilitation nurses and/or by rehabilitation nurse consultants brought into the hospital. Another alternative would be to send nursing personnel to other institutions providing rehabilitation programs in order to develop a body of skilled rehabilitation nurses for the study hospital.

The nurse coordinator role for the stroke care program would

be assumed by the nurse presently employed as the medical care coordinator in the study hospital. The skills in stroke rehabilitation possessed by this individual would be evaluated and the options made available to other potential rehabilitation nurses would be available to her as well. Increasing the knowledge and skills of this nurse would be paramount in preparing her to assume the nurse coordinator role for the stroke team.

The occupational therapist and the physical therapist included as members of the stroke team would be selected from among the therapists presently working in the study hospital. There is an occupational therapist and at least two physical therapists, all skilled in stroke rehabilitation, who have demonstrated interest in an organized team approach to stroke care. Hiring an additional occupational therapist and another physical therapist might be necessary in order to cover days off and in order not to sacrifice therapy given other hospital patients for the sake of promoting the stroke care program.

The occupational therapist interested in an organized stroke care program has also received training in speech therapy. The skills in speech therapy possessed by this particular individual would be employed in the evaluation and re-training of stroke patients with speech difficulties. More specific responsibilities of the medical director, rehabilitation nurses, nurse coordinator, occupational-speech therapist and physical therapist are defined in the review of the literature.

The Visiting Nurse Coordinator assigned to the study hospital

would be included as another member of the stroke team. According to the investigator's experience as a staff nurse in the study hospital, this additional responsibility for the visiting nurse coordinator might be an unrealistic extension of the services this individual provides. A second visiting nurse coordinator might have to be recruited to carry out the functions of this member of the stroke team. The responsibilities of the Visiting Nurse Coordinator would entail: the provision of home health services for patients deemed able to return home if such services were available and assisting with the determination of appropriate extended care facilities for patients requiring supervision on a more continuous basis.

In addition to the essential stroke team members specified above, the stroke team would be expanded to include additional specialists according to individual patients' needs. A variety of consultants are available within the study hospital, as noted in the medical record review findings. One or more of these consultants might be called upon periodically to aid the team in rehabilitating particular stroke patients. For example, since the study hospital has a psychiatric service, a psychiatrist might be a likely consultant to the stroke team. A dietician or a chaplain might also be a prospective member of the stroke team in order to individualize care for certain stroke patients.

CRITERIA FOR SELECTION OF NURSING PERSONNEL AS PART OF THE MASTER NURSING STAFFING PLAN FOR THE STUDY HOSPITAL

Concerning the staffing of nursing personnel for the stroke care program, some guidelines have already been established in developing a body of qualified rehabilitation nurses. The specific criteria for staff selection, suggested in the review of the literature, would also be utilized in the process of selection and/or preparation of this qualified group of nursing personnel.

The need for articulation between the staffing pattern or nursing personnel for the stroke care program and the staffing of nurses for the entire hospital was identified in the review of the literature. A daily patient classification system is utilized by the study hospital in identifying nursing hours necessary for meeting patient care requirements.

The classification of stroke patients would conform to this general classification system for all patients in the study hospital. According to the utilized classification system, most stroke patients would generally seem to require nursing hours associated with complete or intensive care because of the complexity of needs and the demand for much assistance and supervised activity.

DAILY PATIENT CLASSIFICATION REPORT

PATIENT CARE REQUIREMENTS

Routine: (4.3 Hours)

* Minimal nursing assistance; feeding, bathing, and ambulation
* Few medications, simple treatments 1
* Little emotional and teaching support
* Minor surgical pre- and post-ops

Moderate: (5.3 Hours)

* Moderate nursing assistance; feeding, bathing, and ambulation
* Restricted activity
* Periodic treatments, observations, and/or instruction 2
* Most major surgical post-ops after first day
* Most chronically ill patients

Complete: (8 Hours)

* Complete nursing assistance; feeding, bathing, and ambulation
* Does not require constant observation or surveillance 3
* Considerable emotional support, observation and/or instruction
* Frequent treatments
* Major surgical first day post-op

Intensive: (10.0 Hours)

* Patient requires almost constant surveillance and observation
* Patient demonstrates extreme symptoms
* Monitored patients (cardiac/respiratory), severe burns, 4 hemorrhaging, multiple injuries, acute psychotics, etc.

Some additional aspects of staffing would have to be considered in providing nursing care for stroke patients in the program and in meeting staffing needs of the rest of the hospital. A decrease in the enrollment of stroke patients in the program would justify the "floating" of rehabilitation nurses to other units of the hospital. Services of "floated" rehabilitation nurses would seem to be best utilized on hospital units where patients with other medical disabilities warrant the use of some rehabilitative nursing measures.

Providing continuity of care for stroke patients in the program would be a major concern in determining which rehabilitation nurses would be "floated" to other hospital units when the census of enrolled stroke patients is low. The development of nursing expertise in rehabilitation would also be an important consideration in assigning appropriate nurses to "float".

DETERMINATION OF THE STROKE POPULATION

In determining which patients would be appropriate recipients of a team approach to stroke care, attention must be given to the criteria for enrollment in the program. With the availability of an intensive care unit in the study hospital, stroke patients who require life-saving measures would be cared for in the intensive care unit. Stroke patients who have successfully progressed through the acute phase and who upon evaluation show signs of benefiting from a rehabilitation program would be enrolled in the s troke care program. Of course, patients who were stable following stroke would be evaluated as early as possible for enrollment in the program. For further clarification of the selection of appropriate candidates for the stroke care program, the reader is referred to the selection criteria outlined in the review of the literature.

BASIC COMPONENTS OF STROKE CARE

The basic components of stroke care would be accepted as presented in the review of the literature. The principles of stroke rehabilitation, proposed by the Joint Committee for Stroke Facilities would underline the activities of the stroke team.

Communications between the individual stroke team members would be facilitated by a weekly team conference. During these conferences, operational information about each patient would be shared in order that realistic goals for recovery might be set and so that appropriate rehabilitative measures for meeting these goals might be determined by the team. Through the team sharing of observed patient performance, the weekly conferences would also provide a vehicle for re-evaluation of rehabilitative goals and measures.

Physical therapy would be initiated as soon as possible following enrollment into the stroke care program. Depending on patient census, nursing personnel or the physical therapist, or both, would assist stroke patients in gaining mastery of bed exercises. During this initial phase when paramount importance is given to accomplished performance of the bed exercises, an active program of range-of-motion exercises would be carried on as well. As soon as stroke patients are able to assume, unassisted, a sitting position on the side of the bed, efforts would be directed toward achievement of standing balance and safe transferance from bed to wheelchair.

As part of the gradual resumption of independent activities, stroke patients would be assigned to appropriate wheelchairs.

Wheelchair activity could be introduced at anytime in the recovery process as long as a sitting posture were well tolerated.

Gaining independence in ambulation would be the next major goal of physical therapy toward achievement of maximum recovery. A variety of assistive devices might be utilized in promoting safe ambulation.

When a combination of severe neurological damage and low motivation were encountered in a patient, rehabilitative efforts would be adjusted toward achievement of total wheelchair independence unless other factors might still make ambulation a realistic goal.

Concurrent with the accomplishment of physical therapy goals would be the acomplishment of occupational therapy goals. Demonstration and supervised practice time in performing activities basic to daily living would be provided. Efforts of the occupational therapy and nursing personnel would be directed toward assisting stroke patients in dressing and grooming themselves. Resumption of normal eating and elimination patterns would be another concentration area. The occupational therapist would provide additional means for regaining upper extremity function, particularly, through more recreational activities such as painting and writing.

Contributions of nursing personnel in stroke care would be focused on the development of workable nursing care plans. Such plans would reflect data gathered through the assessment of physiological and psychosociological needs of patients and be used as a guide in planning, implementing, and evaluating nursing care.

Reinforcement of efforts of other stroke team members would be a part of the rehabilitation nurses' activities. Coordination of all services provided for the patients by the team would rest primarily on the shoulders of the rehabilitation nurses and particularly on the shoulders of the nurse coordinator. The administration of ordered medications would be the responsibility of nursing personnel. Nursing efforts would stimulate and carry on the teaching of patients' relatives in order to assist in the home care of discharged stroke patients. Nursing would concentrate on the provision of a warm, friendly environment through which the shared difficulties of stroke patients might serve to reinforce rehabilitative efforts and provide a sense of community.

A daily routine for care, such as presented in the review of the literature, would be adapted by the stroke team as a means of organizing rehabilitative activities and of providing continuity of care so necessary to the recovery process of stroke patients.

SELECTION OF A SUITABLE ENVIRONMENT

As revealed by the medical record review findings, stroke patients are currently cared for primarily on one of three hospital units in the study hospital. In order to maximize efforts of the stroke team, patients, personnel, and equipment---all would be centralized in one stroke care area.

According to the medical record review, the major medical unit of the study was the unit where the greatest number of stroke patients received care. It would follow then, that the stroke care area might best be situated nearest to this unit. Renovation of present rooms on the medical unit would provide an area conducive to both healthful living as well as the allottment of physical space necessary for carrying out the stroke care program. An estimated patient census would be a helpful indicator of the size of the spaces needed for rest, work, and recreation. Because the record review findings revealed that relatively little occupational and physical therapy was provided on either an inpatient or outpatient basis; because patient diagnosis was often vague; and because many patients returned home, no attempt was made to project an expected census from the study sample. Instead, reference was given to the size of two stroke care units cited in the literature. The St. Luke Hospital unit boasts a twelve-bed unit whereas the Indiana University Medical Center has a six-bed unit. In light of this data, and in accord with the total hospital capacity and the physical structure of the medical unit of the study hospital, a six-bed unit with a possible expansion to eight beds is proposed. Two large four-bed wards,

located next to one another would be converted into the six-to-eight bed sleeping area. A folding door between the two rooms would replace the present wall. This folding door would facilitate the provision of privacy between male and female patients. The two bathrooms in the present wards would be retained but would have to be enlarged to accommodate the use of wheelchairs. Two large private rooms across the hall would be converted into a therapy and recreation area. One of the two bathrooms in these rooms would be retained but enlarged to accommodate wheelchairs and to include a combination tub and shower area. The shared wall between these two private rooms would be removed.

SELECTION OF APPROPRIATE EQUIPMENT

The information included under this heading in the review of the literature would be used as a guide in selecting equipment necessary for implementation of the stroke care program. Concern would have to be given to the conservation of space in filling the sleeping and therapy-recreational rooms with equipment.

Properly equipped beds and bathrooms would be provided. A parallel bar, exercise mat, table and chairs, as well as ambulatory aids would be included as essential equipment. Construction of some cabinets would help to keep necessary supplies within easy reach, particularly for the occupational therapist. More sophisticated materials mentioned in the review might be purchased as the program gains status and the team can more readily justify a larger budget.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS

Summary:

This study was undertaken to design an organized stroke care program for implementation in a specific small acute care hospital which would promote maximum restoration of function for the stroke patients admitted for diagnosis and treatment in that hospital. The stroke care program, designed for the study hospital, was based on information gathered from the review of the literature, observations made by the investigator in two acute care hospitals which have existing stroke care programs, data collected from the medical record review of patients admitted to the study hospital for stroke care from January 1972 through May 1972, focused interviews with department heads of the study hospital and experiential data gathered by the investigator as a former member of the staff of the study hospital.

Recommendations for Further Study:

1. Validation of the effectiveness of the program would have to be tested clinically. A study comparing parameters of given patients enrolled in the stroke care program in the study hospital with the same parameters of care given patients in other hospitals without stroke care programs might test the effectiveness of the program. A similar test of effectiveness might be conducted between the

study hospital and another hospital also providing an organized stroke care program.

2. Following the implementation of the stroke care program, greater use of rehabilitative goals and measures should be promoted in the study hospital in the care of all patients and particularly for those patients with long-term medical problems. Members of the stroke team might be used as resource people.
3. A plan for follow-up of discharged stroke patients should be designed and implemented by the study hospital to promote the continuation of treatment plans.

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AN ABSTRACT OF THE FIELD STUDY OF

Shelley Jordan for the Master of Nursing

Date of receiving this degree: June 7, 1974

Title: A STROKE CARE PROGRAM: A

MODEL FOR USE IN AN ACUTE CARE HOSPITAL

Approved [redacted]

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ABSTRACT

The need for comprehensive stroke care in acute care settings is validated by the literature.

The lack of an organized approach to rehabilitation of stroke patients admitted for care was noted in the study hospital, an acute care setting. This study was undertaken to design an organized stroke care program for use in the identified hospital. The program represents a synthesis of information. Data gained from a review of the literature concerning stroke care formed the basic structure on which the program was built. Observations made by the investigator in two hospitals with organized stroke care programs provided additional baseline data for designing the program. The program was made specific to the study hospital using findings from a medical record review of patients admitted for stroke care from January, 1972 through May, 1972. Focused interviews with hospital department heads and experiential data gathered by the investigator as a former member of the hospital staff provided supplementary information in order to make the stroke care program specific to the study hospital. The program was presented and recommendations for testing the effectiveness of the program were made. Additional recommendations were made to improve the rehabilitative status of other patients in the study hospital and to devise a follow-up plan for patients participating in the stroke care program.