

A CONCEPTUAL MODEL OF A SYSTEM OF
NEUROLOGICAL PATIENT CARE

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CHAPTER I

INTRODUCTION

The human brain and nervous system are very delicate and complex. Many of their functions remain a mystery. Through years of experience and laboratory experiments, doctors and scientists have identified some functions of certain brain tissue and traced the nerve supply to most areas of the body. Even with the most sophisticated equipment and diagnostic measures, some areas and functions of the brain are still unexplained.

Persons having symptoms involving the brain and nervous system are classified as neurological. When a neurological patient is admitted to the hospital, he is usually assigned a room in a surgical or medical unit. The nurses on these units have a wide variety of responsibilities. These range from direct patient care and observation to supervision of other personnel and communication with everyone in the health care system. These nurses also care for many types of patients. In everyday language, they are called "generalists." To be informed about every medical diagnosis and remember all the important aspects associated

with each is a difficult task. Uncertainty on the part of the nurse is quickly detected by other personnel, patient, and family. Consequently, all may voice legitimate concern regarding the quality of care given in specific specialty areas.

Neurology is sometimes a confusing and mysterious area for the nurse. The neurological patient may have symptoms which are difficult to observe or which seem irrelevant. The hospital must assure that patients receive the best quality of care possible. One method by which quality of care can be enhanced is by maximizing the utilization of the facilities and personnel. Business has done much research in the area of maximum utilization of resources that would be most applicable to nursing care systems. By analyzing the situation and reorganizing the plan of patient care, nurses may be able to increase their efficiency and allow for some degree of specialization. Personnel prepared to care for a specific type of patient should be able to work more efficiently and make significant observations. This may be of particular importance in caring for neurological patients.

Problem

The problem of this study is: "Can a conceptual model for a system of neurological patient care be developed?"

Purpose

From the statement of the above problem, the following purposes evolved:

1. To assess the present system of neurological patient care
2. To identify progression of the neurological patient within the health care system
3. To identify nursing personnel involved with the patient in each stage of progression
4. To identify the competencies for nursing personnel functioning in each phase of care
5. To identify the educational requirements and skills prerequisite for functioning in each phase
6. To develop a conceptual model for a system of neurological patient care

Questions

On examining the purposes of this study, the following questions need to be answered:

1. Is a system or model presently being used?
2. What nursing personnel care for neurological patients at the present time?
3. What competencies are necessary for those caring for neurological patients?
4. Are there various levels of competencies that could be utilized in the model of neurological patient care?
5. If there are, in fact, various levels of competencies, how could personnel attain these levels?

Background and Significance

Systems designs and conceptual models have long been utilized in scientific and business endeavors. If patient care were analyzed and its components defined, perhaps the application of systems theory would be appropriate. To consider this possibility, an understanding of systems design and theory is required.

Levey and Loomba (1973, p. 58) describe a system:

A system has a structure and a set of goals, properties, functions, inputs, outputs, and in many cases, feedback mechanisms. A system connotes order as opposed to chaos; implies a logical as opposed to a haphazard attack on problems; and a global, rather than a local, point of view.

Input, output, and feedback are meaningless if they are not valued by those who will utilize the system. A system for delivery of services should provide security to patients and staff by structuring a purposeful day's activities. All elements of the system must be participating with a sense of understanding and responsibility (Abdellah, Martin, Beland, Matheney 1973, p. 4). To devise such a system requires extensive study to identify and analyze problem areas of health care delivery. Abdellah et al. (1974, p. 513) refer to this need:

Many crucial problems relating to the organization and delivery of nursing services have barely been explored Systems research is developing in the health and hospital fields and will become increasingly important in planning for the preparation and utilization of nursing personnel for various community facilities.

Abdellah et al. (1973, p. 22) state that model and theory development related to nursing practice should be undertaken because little has been done in this area. Abdellah et al. (1973, p. 22) go on to ask who should develop these models in nursing. This is the answer they came up with:

The registered nurse (RN) with depth preparation in a basic science who continues to maintain her identity with nursing, who is both a nurse and a scientist, who has learned the rigors of integrating and synthesizing basic concepts of one discipline with the other represents the individual who will build models and theories relevant to nursing.

Levey and Loomba (1973, p. 5) identify the three main components with which any health system must deal:

" . consumers of health care, providers of health care, and organizational mechanisms for the delivery of health."

The development of a health care system for neurological patient care is dependent upon the identification of various nursing roles and criteria for each role. This study is to define a system of neurological patient care based upon identified patient populations and their health care needs. Churchman (1968, pp. 38-47) provides the following guidelines relating to systems:

. . . we can outline the five basic considerations that the scientist believes must be kept in mind when thinking about the meaning of a system:

1. the total system objectives and, more specifically, the performance measures of the whole system;
 2. the system's environment; the fixed constraints;
 3. the resources of the system;
 4. the components of the system, their activities, goals, and measurements of performance;
 5. the management of the system
- (Churchman 1968, p. 39)

Churchman (1968, p. 40) continues by explaining each item in the outline. The test of an objective of the system is the determination of whether the system will knowingly sacrifice other goals in order to attain that objective. In this instance, if an objective of providing

increased nurse-patient contact time is defined, will the system adjust staffing and budget patterns to obtain this goal? If the system is not willing to allow change to reach the goal, maybe the stated objective and goal do not reflect the system's true goals. The environment lies outside the system. It is outside the system's control, but determines in part how the system performs (Churchman 1968, p. 41).

The environment of a patient care system is composed of the population demanding the services offered by that system. The resources are inside the system. They are the means the system uses to do its jobs. Resources are the things the system can change and use to its advantage (Churchman 1968, p. 42). The resources of a patient care system include the available facilities, personnel, skills, and equipment. The potential for change and improvement in these areas is also an important aspect of the resources of a system.

The management of the system generates the plans of the system, and makes sure the plans are being carried out (Churchman 1968, p. 43). A patient care system relies on management to initiate the plans and assure that realistic means are available to obtain the goals. Systems design is a planning device. Frieden and Peters (1970) have identified similar categories necessary for health planning.

The categories of health information necessary for health planning are: 1) prevalence; 2) utilization, and 3) resources (Frieden and Peters 1970). Information on the number of people with a certain condition can be useful in assessing unmet needs and establishing service priorities. Utilization of present facilities is an indicator of future needs. This information may also identify specific areas of need and help establish priorities. An inventory of the sources or components of a health system reflects the availability of facilities, services, and personnel (Frieden and Peters 1970). Other information may be identified in the inventory of resources according to the goals and objectives of the system.

The introduction of interdisciplinary skills, e.g., systems management and operations research, computer and information sciences, organizational theory, economics, etc. in health services research is not sufficient to design and implement an effective system of patient care. Equally important is the need for nurses who possess an in-depth training in a clinical specialty based on a patient-centered approach. They also need an understanding of health services and a professional commitment to strive to solve the complicated problems in the health field (Abdellah et al. 1973, p. 11). By utilizing skills of systems analysis and design,

is it possible to reorganize the present system of patient care to allow for some degree of specialization?

Definitions

For the purposes of this study, the following definitions will be used:

Conceptual - An idealization based on an analysis of reality

Model - ". . . conceptual representations of reality" (Riehl and Roy 1974, p. 6).

Neurological patient care - Care given to those patients with problems or potential problems affecting the neurological system

System - "A system has a structure and a set of goals, properties, functions, inputs, outputs, and in many cases, feedback mechanisms" (Levey and Loomba 1973, p. 58).

Limitations

The selected hospital's administrative structure and financial capabilities will not be controlled and thus may influence the system's design.

Delimitations

Only one health care system will be utilized in this study.

Assumptions

It is assumed that the systems approach is applicable to specific categories of patient care.

Summary

Can a conceptual model of a system of neurological patient care be developed? To answer this problem statement this study will analyze the present process of neurological patient care. The analysis was performed after a thorough review of literature for information on models, systems, neurological care, competencies, and evaluation methodologies. Chapter II includes a review of literature significant to systems analysis methodology and subsequent systems design. Chapter III presents the methodology implemented in collecting the data for analysis. Chapter IV consists of the analysis of the data and the design of a conceptual model for a system of neurological patient care. Chapter V summarizes the study, derives conclusions from the data obtained, and suggests possible implications for utilizing the designed system.

Recommendations for implementation and further research are also included in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter presents information on topics of concern in the preparation of this study. Relevant facts on systems components, design, and analysis are considered. In the area of analysis, flow charts and PERT are discussed. A section on systems in health care identifies the use of systems theory in health care now and possible implications for the future.

A short discussion on the use of conceptual models in nursing is included in this chapter. The section on competencies identifies pertinent information in regard to neurological competencies and educational methods of achieving these competencies.

Evaluation methodology is discussed in relation to educational evaluation and systems evaluation as a constant feedback mechanism for improvement.

Systems

Systems design is the process where information derived from systems analysis is synthesized with related knowledge in order to establish a system capable of achieving desired goals. The creation of a system requires analysis, design, implementation, and management. These activities are continuous and overlapping since present systems must be improved and new systems developed. In general, three stages exist in the life cycle of a system. These stages and list of typical activities within each stage are shown in the following figure (Levey and Loomba 1973, pp. 61-64).

Figure 1. The Three Stages in the Life Cycle of a System

| Stage 1 | Stage 2 | Stage 3 |
|-----------------------------|--------------------------------|-------------------------------------|
| Study and Design | Implement and Install | Operate, evaluate, modify |
| Problem recognition | Detail system design | Operation |
| Determination of objectives | File design | Efficiency Analysis |
| Study present system | Develop programs | System modification and maintenance |
| Develop system requirements | Develop test criteria and data | |
| Design new system | System test | |
| Propose solution | Conversion | |

There are basically two types of systems--closed and open. A closed system operates with fixed, automatic, ritualistic relationships requiring little or no outside intervention or interaction. Its organizational characteristics tend to be lost when information from the outside enters the system. The open system interacts with its environment. It continuously gathers and receives information about the environment and behavioral reactions occurring within and between component relationships. This information signals directions for adaptation toward the goals of the system (Ryan 1973, p. 50). Ryan (1973, p. 50) identifies additional components of the open system:

In an open system, the whole is considered in terms of flow. The flow process involves input as the energizer [or starting force] throughput as the process activity, and output as the result of the action. Feedback is that part of the flow which serves as a control by continually monitoring and evaluating all component actions and interactions. The flow process is cyclic in operation; it strives for balance and seeks to sustain the life of the system.

One must be able to describe and represent a system in order to understand it. A full description of any system will require specifications on: 1) objectives to which the system addresses itself; 2) the nature of the system (e.g., open or dynamic vs. closed or static); 3) elements of the system; 4) relationships between system's elements and; 5) procedures and mechanisms by which the system will

operate (Levey and Loomba 1973, p. 60).

A very important characteristic of systems theory is its ability to solve problems according to a planned methodology. The problem is analyzed as a total process, and the conclusions are then utilized as information in making decisions. Because systems theory operates independently, it has the potential to focus on a multiplicity of relations (Ryan 1973, p. 52).

Systems Analysis

Systems analysis is the process of discovering the relevant and dependable relationships between the various parts of a system. This requires three steps: the definition of the system, the analysis of the system's properties, and the improvement or correction of the system (Hertz and Eddison 1964, p. 125). Defining a system means the selection of relevant parts, relevant connections between parts, and methods of data collection. The analysis of the system's properties is made to gain knowledge about the system's response characteristics and to examine the structure for completeness and consistency (Levey and Loomba 1973, p. 63).

Once a decision has been made to study the present system, the analyst must determine what he is looking for, or specifically what he wants to get out of the study. Following is a list of things the analyst might want to obtain and some possible reasons for collecting them:

1. Determine who the best people are for certain jobs
2. List the information and qualifications people must have to make certain decisions
3. Determine a rough breakdown of personnel according to general duties
4. Find out if workers know their true functions and where they fit in the overall plan
(Lott 1971, p. 88)

Messick, Singh, and May (1975, pp. 7-11) have identified the following steps in analyzing a problem:

1. Obtain a data base. The symptoms may not be the real problem. It is necessary to observe and study the existing system to determine controllable and uncontrollable variables that affect the performance of the system.
2. Define the problem. The data base is studied to identify the real problems and distinguish them from the surface symptoms. Then, goals can be set and practical and acceptable solutions developed.
3. Practical solutions. Sometimes these become self-evident, but quantitative techniques may be necessary to develop practical solutions.
4. Implementation of results. This demands the cooperation of clinical staff so the investigator should have obtained their collaboration and support throughout the study.

5. Evaluation. Follow-up evaluation is necessary to determine if recommended changes have been implemented and whether solution did, in fact, improve the situation.
(Messick, Singh, May 1975, pp. 7-11)

Lott (1971, p. 103) acknowledges that during the process of studying the present system, you will surely be getting design ideas for a new system in those areas where changes are clearly required. He states that it is desirable to study the present system to find out only those things which will be needed for later steps. Emphasis is placed on spending the minimum amount of time possible on this effort to allow more time on analysis of the information one has obtained and on the design of the necessary changes (Lott 1971, p. 103). One methodology for obtaining information and beginning analysis of the present system is to study the sequencing of events in the present system.

Program Evaluation Review Technique (PERT)

PERT is a type of network analysis concerned with sequencing events that are complex activities and with the amount of time which is realistically required for completion of each activity (Archer 1974, p. 27). This study will principally utilize only those components of PERT which are concerned with the sequencing of events with maximum utilization of resources. Because of its ability to provide the

user with a graphic representation of the components of a program, PERT has the potential to become a valuable health planning mechanism (Merten 1966).

One advantage of using PERT is that at the outset it requires statement of the terminal event in measurable terms. The intermediate events that make up the PERT network must be sequenced in required order for completion of the project. In doing this, it becomes apparent that some of the events are independent of each other in terms of the resources required for completion. Such events may be undertaken simultaneously. In illustrating this, such events may be shown parallel to each other rather than in a continuous line (Archer 1974, p. 27).

Archer has identified six stages in the generation of a PERT network:

1. Define terminal event or final objective of the project precisely.
2. Brainstorm all the events that must occur before the terminal event can take place.
3. Order the events in the sequence necessary for completion of the project. Another approach is to begin with the terminal event and plan backwards.
4. Define the activities essential for progression from each event to its successor. Develop a list of these activities along with the events they must precede. Record this someplace for permanence and easy visibility.
5. Estimate the time needed to move from any one event to its successor.

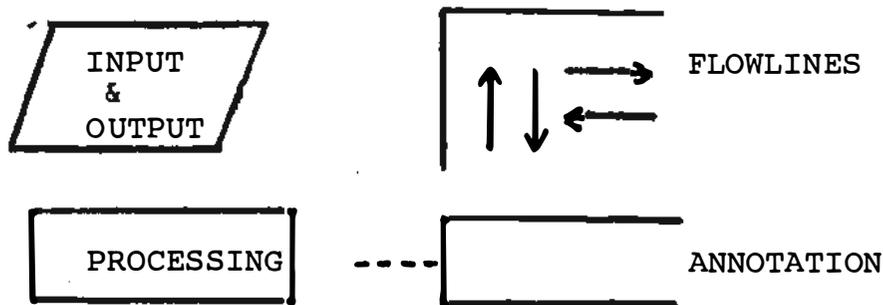
6. Prepare the final PERT network so that it can be used as a control tool or device throughout implementation of the project (Archer 1974, pp. 30-31).

PERT may be used for planning only in objective-oriented programs. Its most effective use occurs after the selection of specific objectives and during the implementation and evaluation steps (Merten 1966). Once devised, the PERT network becomes a useful control device, making it possible to evaluate both the efficiency and the effectiveness of program planning and implementation (Archer 1974, p. 32). The standard format for presentation of a PERT network is with the flowchart.

Flowcharts

The purpose of a flowchart is to reduce a procedure to its basic, component parts and to emphasize their logical relationships (Daniels and Yeates 1971, p. 30). Chapin (1971, p. 29) views a flowchart as a means of portraying a sequence of specific operations in graphic form. He identifies two types of flowcharts: the flow diagram is a flowchart of an algorithm, and the system chart is a flowchart of a system. The flow diagram stresses how a function occurs while the system chart stresses what is involved in the operation of the system (Chapin 1971, p. 29).

The basic outlines utilized in a flowchart are the input-output, the process, the flowline, and the annotation outline (Chapin 1971, p. 44).



The input-output outline indicates an input or output operation, or input or output data. This often correlates with the events of the PERT chart (Chapin 1971, p. 45). The process outline is the general purpose outline used when no other outline is appropriate. This outline indicates data transformation and data movement. The flowline outline connects other successive outlines to indicate the sequence of operations. This sequence is termed "the direction of flow" (Chapin 1971, p. 46). The normal direction of flow is from top to bottom and from left to right. Arrowheads on the flowline are required to direct the reader's attention only when the flow pattern deviates from the normal sequence (Chapin 1971, p. 46). The annotation outline supplies comments and explanatory notes. The dashed line indicates this is not part of the line of flow as well as serving as a pointer to the outline to which the annotation applies (Chapin 1971, p. 46).

Utilizing the names of events in the flowchart makes the flowchart easier to follow than when numbers are used to identify the various events (Archer 1974, p. 32). Activities that must occur before the project can progress from one event to the next are indicated by arrows on the flowchart. The direction of the arrow indicates the direction of the activity flow. Having defined the activities between events, the amounts and kinds of resources necessary to move from one event to the next can be determined (Archer 1974, p. 27). Such a flowchart could be utilized to depict the progression of the patient during his hospital stay and identify those resources necessary for his care.

Systems and Health Care

Systems research is developing in the health and hospital fields and will become increasingly important in planning the preparation and utilization of personnel for community health facilities. The introduction of operations and systems research into the area of health care occurs at a time of increasing public and internal pressure. Automation, technology, mechanization, and social and economic changes have brought increased costs of patient care and shortage of key professional people (Abdellah et al. 1973, p. 513).

Several of the problems of health care services identified by Burns (1971, p. 2165) are: inefficient delivery systems; inefficient distribution and use of manpower; fragmentation of services; and emphasis in the system upon convenience of the providers instead of the convenience of the consumers. Investigation into these areas might provide an analysis of the present situation and determine if the principles of system theory are being utilized or if they may be applicable.

Systems theory has been applied to many areas of nursing in recent years. Schulberg (1969) identified a systems evaluation model utilized primarily to evaluate the cost and effectiveness of health care. Ryan (1973) incorporated general systems theory in a nursing care plan system with built-in control measures. Baum, Bergwall, and Reeves (1975) consider systems theory to be important in the education of health planners and managers. They have devised the "Health-Care Delivery Simulator for Urban Population" (HEADSUP II), a computer simulation of primary health care delivery in an urban or suburban setting. The simulation is capable of reproducing existing delivery system designs as well as modeling custom-designed delivery systems (Baum et al. 1975, p. 273).

Mackay and Ault (1977) have developed a systematic approach for individualizing nursing care. A comparison is made between "functional nursing care" and "individualized nursing care." This study deals solely with the nursing approach to nursing care and recognizes that individualized patient care is an interdisciplinary effort. The authors state that the concern of functional nursing care is that of getting the work done, while individualized nursing care involves meeting the specific and comprehensive physical, psychological, and social needs of each patient (Mackay and Ault 1977, p. 19).

The concept of meeting these specific needs of each patient has prompted this investigator to develop a system of neurologic patient care. The intent is to organize this system for maximum utilization of resources by identifying the progression of a patient, the personnel he contacts, and the competencies required of these personnel. This differs in numerous ways from the Mackay and Ault study (1977), but the chief difference lies in the method of implementation. Mackay and Ault propose to meet the special needs of the patient by altering the focus of nursing care. The present study attempts to identify the competencies necessary to meet the needs of the selected population and also identify educational and evaluation methodologies to assure that these needs are met. These may then be incorporated in the

conceptual model for the system of patient care.

Conceptual Models in Nursing

Since 1859 when Nightingale challenged nurses to define nursing, many definitions and statements regarding nursing have evolved. From these, several nursing models were developed in an attempt to better illustrate behavior and task interactions in nursing performance (Riehl and Roy 1974, p. 16). Orem (1971), Rogers (1970), and King (1971) have developed conceptual models which reflect their theoretical frameworks of nursing.

The Congress for Nursing Practice of the American Nurses' Association has devised a model to assist nurse practitioners to implement a program of assuring quality nursing care (Congress for Nursing Practice 1975, p. 14). This model has a similar goal as the one proposed by this study. However, the ANA model focuses on organizational activities and the model proposed by this study hopes to present the competencies required to assure that care for a specified population.

Apparently, little has been done to develop models identifying the dynamics of health care. Communication with several large health institutions has revealed that general standards of care and educational requirements have been identified, but remain fragmented. No conceptual model

could be found that organized specific standards and requirements into a system reflecting the total process of care received by the patient.

Competencies

It can be argued that to a large extent the therapeutic progress of patients is closely related to the amount and quality of nursing care received (Levey and Loomba 1973, p. 93). One method to improve quality of care is to identify competencies and a method for obtaining these competencies. First, obtain information about the kind of activities that are required. Focusing on these activities required to meet standards of quality patient care would pinpoint performance standards and suggest performance evaluation criteria (Cantor 1975, p. 9).

The rendering of health care has been divided into three categories of competencies by the Southern Regional Educational Board Curriculum Project (1976). The first of these competencies is conceptual - the ability to use intellectual processes. Acts of identifying, comparing, synthesizing, analyzing, and evaluating are included under conceptual competencies. Human competencies are identified as interpersonal and intrapersonal (between the cognitive and affective self) interactions. Functional competencies include familiar nursing measures involving comfort, hygiene,

safety, nutrition, excretion, diagnosis, and treatment
(Southern Regional Education Board Curriculum Project 1976).

Cantor (1975, p. 9) lists the following methodology
for identifying competencies and following through to
evaluation:

1. Identify nursing care activities needed to achieve particular patient outcomes
2. Determine knowledge and skills necessary to competent performance of the activity
3. Determine the behaviors to be examined at the end of the learning experience which are most predictive of the required nursing activities (certification criteria)
4. Select specific content and teaching methods that will prepare individuals to meet the certification criteria
5. Test trainees at end of program, continue to train and test until required level of competency has been reached
6. Review on-the-job performance evaluations to assess the validity of the program's evaluative criteria as well as its educational content

Required nursing competencies vary to some degree dependent upon the category of patient receiving the care. Specialized categories of care identified by the American Nurses' Association include: Maternal-Child, Gerontology, Psychiatric, and Neurological.

Neurological Competencies

"Nursing staff are often poorly prepared for the specialized function in theory and practice" (Abdellah et al. 1973, p. 66). "There are several barriers to the full utilization of specialists in nursing at the present time" (Meltzer, Abdellah, and Kitchell 1969, p. xxiv). Some of these barriers may be organizational resistance, availability of criteria, and educational resources for "specialization," as well as hesitancy on the part of the health care worker. Here, specialization means additional education focusing on a specific category of patient, and not necessarily in the formal hierarchy of education.

The neurological competencies to be identified for the system of patient care will be based on identified activities of the personnel, the three categories of competencies identified by the Southern Regional Education Board (listed under "competencies"), and the ANA Standards of Neurological and Neurosurgical Nursing Practice. These Standards of Nursing Practice are listed below:

1. The collection of data about the health status of the individual is systematic and continuous. These data are recorded, retrievable, and communicated to appropriate persons
2. Nursing diagnosis is derived from health status data
3. Goals for nursing care are formulated

4. The plan for nursing care prescribes nursing actions to achieve the goals
5. The plan for nursing care is implemented
6. The plan for nursing care is evaluated
7. Reassessment of the individual, reconsideration of the nursing diagnosis, the setting of new goals, and a revision of the plan for nursing care are a continuous process

(Congress for Nursing Practice 1977,
pp. 6-12)

The American Nurses' Association which establishes standards of care for the professional nurse (R.N.), recognizes that neurological and neurosurgical nursing practice is unique in that the nurse cares for patients with physiological dysfunctions which result in impairment of basic body functions and the highest processes of the human mind. The nurse must be alert to subtle somatic, behavioral, or emotional changes which indicate the clinical status of the nervous system and other body systems. These subtle changes also may alter the interpersonal relationships between the patient and those around him (Congress for Nursing Practice 1977, p. 5). An in-depth knowledge of neuropathophysiology is required for recognition of the occurrence of significance of these changes. The neurological nurse should also be knowledgeable in rehabilitative nursing measures (Congress for Nursing Practice 1977, p. 6).

The ANA is in the process of establishing a certification examination for the neurological practitioner who is already a Registered Nurse. This certification may not be possible for all Registered Nurses caring for neurological patients, but it does identify that additional knowledge is necessary for those caring for neurological patients. Some method to provide specialized knowledge and skills to all levels of personnel caring for neurological patients is necessary.

Education

The educational needs of the various competency levels will be determined as stated by Cantor (1975, p. 9) under the section on "competencies." After the needs have been identified, the teaching methodology will be determined according to resources available and applicable principles of learning. In their plan for individualizing nursing care, Mackay and Ault (1977, p. 43) summarize various principles of learning. They state that the learner should be involved in the learning, and that he learns best when the information and skills are meaningful to him. Information should be in a logical sequence and accompanied with visual aids and cues. Rewards also enhance the learning process (Mackay and Ault 1977, p. 43). Regardless of the method chosen for presentation of the material, the learning

process appears to be most effective when it is individualized.

Individualizing the learning process means that performance standards for each job description must be identified and stated in behavioral terms. Then each employee's entry behavior can be assessed in terms of these standards through paper and pencil tests and behavioral checklists. This allows learning time to be spent where it is most needed (del Bueno 1975, p. 17).

Abdellah et al. (1973, p. 10) suggest the use of personnel research methods to establish more rational job relationships so that tasks are performed by qualified workers with the least extensive preparation. The results should include improved productivity in specialty care and improved access in underserved areas as well. Such a policy would demand continued educational reinforcement and evaluation to maintain performance standards.

Evaluation

Evaluation, whether of performance, education, or of a system, should be consistent and follow an identified methodology. The success of evaluation lies in the direct involvement of those who will be evaluated and those who will evaluate. Any evaluation tool must define the responsibilities, expectations, and goals. The areas of evaluation

should be identified specifically and defined for the benefit of both the evaluator and those evaluated (Bernhart and Schuette 1975, pp. 18-21).

Oglesby and Carl (1974, p. 337), identify the purpose for evaluation of a systems model as being to constantly monitor the component parts of the system. Through evaluation of the structure, the practitioners, and the recipients of care, information can be obtained about the system's relevancy to the health care problems of the population it serves (Oglesby and Carl 1974, p. 337). For this type of evaluation, the model must clearly specify objectives that will serve as evaluation criteria of effectiveness, performance, and efficiency (Oglesby and Carl 1974, p. 337).

To be effective, an evaluation methodology should be based on stated criteria, identify strength and weaknesses, and indicate areas for improvement. Feedback mechanisms are necessary for continued improvement (Bernhart and Schuette 1975, pp. 18-21). Ideally, resources will be mobilized to improve the deficiencies revealed by the evaluation.

Summary

This chapter on the review of literature has outlined the many areas that need to be considered before a conceptual model of neurological patient care can be developed. Systems theory and design have been utilized for many years in planning and organization. The research and analysis involved required methods such as PERT and flowcharts to outline the findings in a consistent manner. Then, after the components have been identified, goals can be defined and a systematic plan for attaining those goals established.

Recently, health care delivery has gradually begun to incorporate some elements of systems theory into diverse areas such as community planning and nursing care plans. Systems analysis and design may be applicable to other areas of health care. Specialty areas of nursing might utilize the systems approach for maximizing the quality of patient care.

Competencies for specialty areas of nursing must be defined. This may be accomplished by analysis of the present situation and utilization of identified standards of care such as the ANA Standards for Neurological and Neurosurgical Practice (Congress for Nursing Practice 1977).

Educational needs to attain these competencies may be identified by analysis of the present situation. Evaluation methodologies must be considered for the educational program as well as continual evaluation of the system developed.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

Introduction

To create a model for a system of patient care, it was necessary to analyze the present situation and assess the needs of the population. The resources and other components presently utilized must be identified before any analysis and subsequent change can be undertaken. This chapter presents the setting for the study, the population, the tool utilized, and the methodology of data collection as well as the treatment of the data.

Setting

The setting used to assess the present neurological care and to identify needs for a system of care was a 315-bed private general hospital in the Central Texas area. The hospital is located in a town of approximately 100,000 people, but also serves much of the surrounding rural area. The total patient census for the fiscal year 1975-1976 was 16,329 (excluding newborns). This locale has two general hospitals and five neurosurgeons. The hospital in this

study has the only facilities for computerized tomography which is an important diagnostic aid for neurological patients.

Population

The population for this study was the facilities housing neurological patients, providers of neurological care, and clients seeking neurological care. Of the thirteen patient units in the hospital of this study, neurological patients were assigned arbitrarily to nine of these units. The only units not caring for neurological patients are: Day Surgery, Post Partum, Coronary Care, and Nursery.

The providers of nursing care included nursing assistants, Licensed Vocational Nurses, and Registered Nurses on two of the units. Two of the nine units were chosen as they care for a large number of neurological patients. The other units usually have only one or two neurological patients at any given time.

One of the units chosen is an intensive care unit with an eighteen-patient capacity. The personnel for the unit during the period of this study included three Licensed Vocational Nurses and sixteen Registered Nurses. This unit cares for critical neurological patients on admission and provides immediate post operative care for patients after

craniotomy, endarterectomy, or other critical neurological procedures.

The other unit has forty-two beds and is designated as an orthopedic/neurological unit. This unit usually operates at full capacity and receives many patients admitted for diagnostic procedures. This unit cares for many laminectomy patients post-operatively and receives other neurological patients after their discharge from ICU. This unit is divided into two sections and operates on a modified team approach. Both sections receive neurological patients as they are randomly assigned by the admissions office. The personnel on this unit during the period of this study included twelve nursing assistants, five Licensed Vocational Nurses, and six Registered Nurses.

For the purposes of this study, a neurological patient was identified as a patient requiring diagnostic procedures evaluating the nervous system or surgical procedures involving nervous system disorders. By utilizing this definition and computerized census records, it was possible to count the number of patients rather than the total number of procedures. It was felt that a patient requiring neurological care would have at least one and maybe more than one diagnostic procedure during their hospital stay.

Tool

A questionnaire to obtain information from the present providers of neurological care was constructed through consultation with a panel of experts. The panel was chosen for their interest in this area and to check the validity of the questions. The panel consisted of a psychologist, a neurosurgeon, the head nurse of the Intensive Care Unit, and a psychiatric clinical nurse specialist.

Questionnaire respondents were to identify their frequency of involvement for the activities listed. The activities identified on the questionnaire consisted primarily of items chosen from a list of criteria identified by the American Nurses' Association Standards of Neurological and Neurosurgical Nursing Practice to evaluate quality of care. Activities focused on general aspects of care as well as those specific to neurological patients.

A sample question with the response choices is shown in Figure 2.

| | | | | | |
|-----------------------|---------------------------|-------------------------|----------------------------|-------------------------------|-----------------------------|
| | Sel- dom do this | Usual- ly do this | Do this every day | Not my respon- sibility | Need In- Ser- vice |
| Discharge Teaching | | | | | |

Figure 2. Sample of questionnaire

The remainder of the questionnaire asked the respondent to identify who provided the services if he did not do this himself. A sample of this section is shown in Figure 3.

| | | | | | | | | | |
|--------------------|-----------|------------|-------------------|-----|----|---------------|-----------|--------------|----------------------|
| Discharge Teaching | I do this | Ward clerk | Nursing Assistant | LVN | RN | Social Worker | Physician | Psychologist | Others (please list) |
|--------------------|-----------|------------|-------------------|-----|----|---------------|-----------|--------------|----------------------|

Figure 3. Sample of questionnaire

The data obtained from the questionnaire will be presented in Chapter IV.

Data Collection

To evaluate the present process of neurological patient care, three areas were investigated. They were:

- 1) Hospital census data were reviewed and information obtained to reflect: a) the number of patients requiring neurological care, and b) the hospital's total number of patients;
- 2) Patients were observed to determine nursing functions required in the sequence of care; and
- 3) A questionnaire was distributed to selected nursing personnel to

elicit data regarding personnel's perception of care.

Phase I - Census Data

The following steps were taken in reviewing the patient census:

- A. Obtain permission from institution
- B. Contact medical records
- C. Obtain computerized data sheet
- D. Compute data pertinent to this study
- E. Analyze census data by categorization
- F. Census data are presented in Chapter IV

Phase II - Patient Observation

Observation of patients to determine nursing functions in the sequence of care involved the following procedure:

- A. Select categories of neurological patients that involve alternative sequences of care
 - 1. Emergency admission
 - 2. Routine admission with diagnostic measures and treatment
 - 3. Surgical admissions

- B. Observe each patient category for sequence of care and nursing functions
- C. Compile all information on sequence of care
- D. Synthesize a diagram to represent each patient category's sequence of care
- E. Compile observation data concerning nursing functions
- F. Construct a table presenting the nursing functions in each phase of care

Phase III - Role Perception Questionnaire

The questionnaire data were collected by utilizing the following methodology:

- A. Construction of questionnaire with assistance of panel of experts
- B. Assure anonymity by requiring only the following demographic data
 - 1. Staff position
 - 2. Educational background
- C. Distribution of questionnaire to orthopedic/neurological unit and intensive care unit
- D. Explanation to participants of how to complete questionnaire and where to return it
- E. Follow-up visits to units to encourage personnel to return questionnaire

- F. Questionnaires picked up on the fourth day as scheduled
- G. Tabulation of data
- H. Analysis of data
- I. Analysis of data is presented in Chapter IV

Treatment of Data

The data were compiled and analyzed for any information that may influence the design of a patient care system. The replies from the questionnaire were tabulated and analyzed primarily in regard to categories and frequency of reply. This information provided data reflecting present competencies and educational needs. The census information was used as a relative predictor for future utilization of staff and facilities.

To analyze the response data from the questionnaire, the following steps were taken:

- A. Assign weights to responses reflecting some degree of activity
- B. Add responses for each item to provide a multiple role score which indicates the item's frequency
- C. Rank the items according to frequency as reflected by the multiple role score

- D. Compare role perceptions of various groups as reflected by frequency scores. Utilize the Rho formula for rank-order correlation
1. Average multiple-role scores for each item for each group
 2. Analyze this information with the Rho formula

$$r = 1 - \frac{6 \sum D^2}{N(N^2 - 1)}$$
 3. 0.30 reflects a moderate degree of correlation, while 0.70 reflects a very high degree of correlation
 4. Present findings
- E. Present data in tables summarizing responses of groups of personnel

The information obtained from the treatment of the various areas of data is presented in Chapter IV.

Summary

The chosen setting for this research study was a 315-bed private general hospital in the Central Texas area. This area has a population of 100,000, plus a substantial rural population and is served by five neurosurgeons who are on the staff of both the hospitals in this town. The specified population was the facilities, providers, and clients of

neurological care. The providers were studied through use of a questionnaire while census review and observation furnished data on the facilities and clients.

A questionnaire was distributed to the personnel on the units selected for this study to obtain information about their role perceptions, competencies, and educational needs. Census reports were reviewed to determine the population's demands for neurological care. The charts of patients in selected categories were reviewed to identify the sequence of events involved in a patient's hospital stay. This data on the present process of neurological patient care were analyzed and consideration given to its importance in the construction of a patient care system focusing on neurological care. The analysis of data is presented in Chapter IV.

CHAPTER IV

ANALYSIS OF DATA

This chapter presents data from a descriptive study to answer the problem: "Can a conceptual model be developed for a system of neurological patient care?" Data are presented from three areas of investigation of the present system. This analysis is essential to develop a model of a system of neurological patient care that represents the needs and resources of those within the system. The three areas of investigation involved evaluation of census records, observation of sequences of patient care, and distribution of a questionnaire to selected nursing personnel. Analysis of the data from the hospital census records will be presented first.

Census Data

The most recent patient population data was for the fiscal year from August 1975 through July 1976. This revealed that excluding newborns, the total number of patients treated in this twelve-month period was 16,329. This data are presented in Table 1. The table also presents the most recent data for neurological procedures which was for the

period from February 1975 to December 1975. This is only an eleven-month period because prior to this, the hospital had not been using the computerized system. Any data comparison with these figures then will be subject to some degree of discrepancy.

TABLE 1. Census Data

| Patient Category | Census Periods | | |
|--|----------------|--------------|-------------------|
| | Annual | Monthly Mean | % of monthly mean |
| A. Hospital census (excluding newborns) Aug. 1975 - July 76) | 16,329 | 1360 | 100 |
| B. Neurological patients Feb - June 1975 (341) June-Dec 1975 (518) | 859 | 78 | 5.7 |
| C. Patients receiving brain scans only | 488 | 44 | 3.2 |
| D. Total Group B & C | 1347 | 122 | 8.97 |

The data obtained revealed that from February 1975 to June 1975, 341 patients received neurological diagnostic procedures or neurosurgical services. From June 1975 to December 1975, these services were provided to 518 patients. These are conservative figures because the numbers given for neurological services do not include 488 patients in this eleven-month period who received only a brain scan. Because

brain scans are used for diagnostic assistance in various areas such as malignancy, it was felt that to include these would be to slant the predictive value of these census reports. However, during the period from February 1975 to December 1975, brain scans remained as the hospital's most sophisticated diagnostic measure for patients with suspected brain disorder. Early in 1976, a more sophisticated procedure, the computerized tomogram, was introduced at the hospital. Therefore, many of the 488 patients receiving brain scans only in the 1975 period may have truly been under observation for neurological problems.

Remembering the slight discrepancy because of disparate time periods of the census reports, some conclusions can nevertheless be drawn. The monthly patient average for the census from August 1975 to July 1976 is 1360 patients. The monthly average of neurological patients from February 1975 to December 1975 is 78. This shows that the neurological patient population requires 5.7 percent of the services rendered by the hospital. If those persons receiving brain scans only had been included in the tabulation, the percentage jumps to 8.9 percent. However, another area to be considered when analyzing the population needs is the neurological patient population at any one time.

An investigation of length of hospital stay indicated that the neurological patient's hospital stay ranged from one to seventy-three days during the period from February 1975 through June 1975. The average length of stay for all neurological patients during this period was 11.1 days. Therefore, one could conclude that for the 518 neurological patients in this time period of 150 days, that there were approximately 38.3 neurological patients in the hospital on any given day. Additional information concerning the neurological patient's needs is needed for an analysis of the present process of care. This data are included in the following discussion of patient progression.

Observation of Patient Progression

Three basic types of patients were observed for this portion of the data. The first type of patient was the routine admission for diagnostic studies and subsequent treatment. The observations revealed several general areas of care. These were: admission to the hospital and ward; activities of daily living; diagnostic tests; treatment and activities of daily living; and discharge. The treatment sometimes consisted of medication, traction, and physical therapy. Sometimes, however, the treatment required surgery. Using the principles from PERT and flow charting, some of these activities can be illustrated as simultaneous events

while others can be shown as alternate events. The diagram for the hospital stay of this patient then, would look like this:

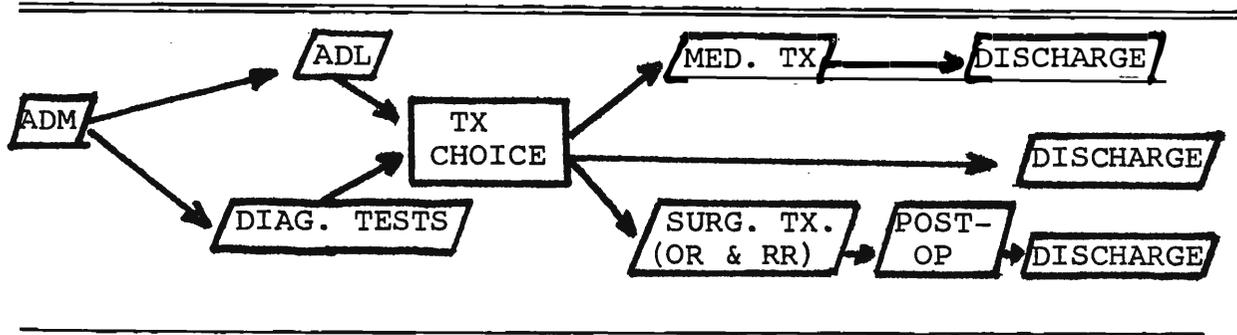


Figure 4. Diagram for the Hospital Stay of a Patient

Figure 4 identifies the sequence from admission to activities of daily living and diagnostic tests which may occur simultaneously. The treatment choice is diagramed as a rectangle rather than a parallelogram to illustrate that this phase usually involves a decision between the physician and patient while the other phases involved nursing personnel. Beyond the treatment choice, the care progresses through one of the alternate routes of medical treatment, surgical treatment, or discharge.

Because of similarities in the three categories of patients, the competencies and personnel involved in each phase will be identified later. The next type of patient observed during the hospital stay was the patient admitted for a surgical procedure.

The general areas of care for the surgical patient closely resembled those previously mentioned. These areas were admission; activities of daily living; diagnostic tests (sometimes); surgery (OR and RR); post-operative care; and discharge. These events can be illustrated as shown in Figure 5. Again, some events may be parallel in the diagram indicating they are simultaneous and independent of each other.

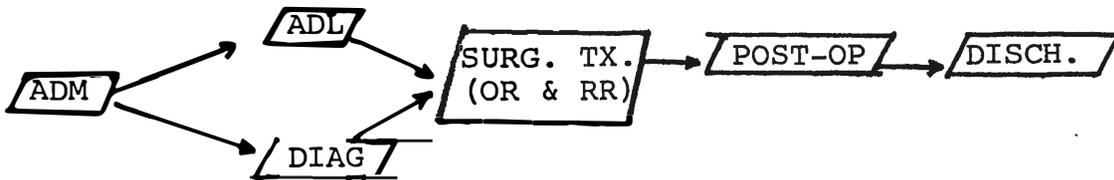


Figure 5. Diagram of the Hospital Stay for the Surgical Patient

This progression represents that of the patient admitted specifically for surgery. Again, activities of daily living and diagnostic tests may occur simultaneously, although the major diagnostic procedures have probably been carried out prior to this admission. Note the similarities of this flowchart to Figure 4 for the routine admission and Figure 6 for the emergency admission.

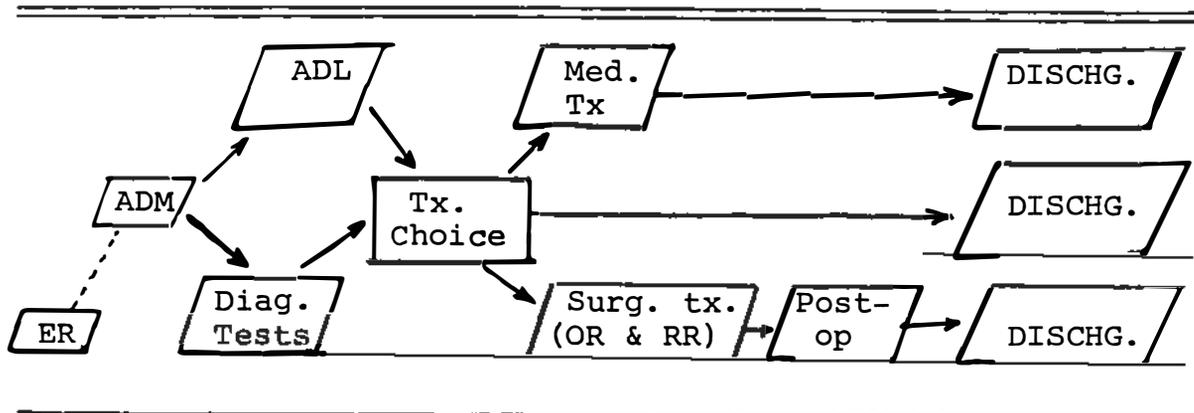


Figure 6. Diagram of the Hospital Stay for an Emergency Patient

After observation, it was evident that the emergency patient had few, if any, deviations from the care of the routine or surgical admission. The emergency admission usually experienced the sequence of events described for the routine admission or the surgical patient. The obvious difference being the additional phase of emergency case. This was usually followed by admission to the patient care unit, diagnosis, medical treatment or surgery, and post-operative treatment. Both of these sequences also involve activities of daily living and discharge. The diagram for the emergency admission reflects these alternative routes in its crossroads design as illustrated in Figure 6. Another purpose of this observation of patient progression was to identify personnel in contact with the patient and the services provided to meet the patient's needs.

During the admission phase, all patients admitted to a unit had contact with nursing assistants, Licensed Vocational Nurses, and Registered Nurses. The emergency admission patient initially had contact only with Licensed Vocational Nurses or Registered Nurses. Throughout the hospital stay, the patient continued to have some contact with all three levels of personnel. The patient going to the intensive care unit, however, had contact only with Licensed Vocational Nurses and Registered Nurses. Although patients had contact with all three levels of personnel throughout the hospital stay, the services provided by the various levels differed. This is reflected in Table 2 which is a summary of services provided to the patient during the progression of care.

Although this table presents only a brief summary of the services provided, it can be seen that each level of personnel participates in the three categories of competencies which were identified in the Review of Literature. These are human (communication and interactions), functional (technical skills), and conceptual (judgmental) competencies. These categories will be expanded for each group of personnel as this information is combined with data from the Standards of Neurological and Neurosurgical Practice and data from the results of the questionnaire completed by the personnel to devise a model of care.

Table 2. Breakdown of Services Provided to Neurological Patients by Personnel and Phase of Care

| Phase of Care | Personnel Providing Services | | |
|----------------------------|--|---|---|
| | Nursing Assist. | LVN | RN |
| Admission | Obtains basic information, provides water, gown, explains ward procedures. | Start medications, communication | Brief nursing assessment, elicits information from patient and family, answers questions. |
| Emergency Admission | | Brief history and assessment, answer questions, critical observations and carrying out orders | Critical observations and assessments, initiates plan of care based on assessment, comforts patient and family, communicates significant information to doctor |
| Activities of Daily Living | Provides most of the hygiene measures, also turning, ambulation, passes communications to other personnel | Provides some aid with turning, ambulation. In ICU, provides complete routine of care | Provides some aid with turning, ambulation. Communicates patient's needs to physician. In ICU, provides complete routine of care. |
| Diagnostic | Prepares patient physically for test, e.g., NPO, enemas. Enforces limitations after tests, monitors vital signs after diagnostic tests | Administers medications necessary for testing, answers questions | Explains procedures to patient and family, answers questions, assess patient's reactions to tests and medications, view test findings for significant information |

Table 2. (continued)

| Phase of Care | Personnel Providing Services | | |
|--------------------|--|--|---|
| | Nursing Assist. | LVN | RN |
| Medical Treatment | Assists with daily activities, cares for patients in traction | Administers medications, provides treatments ordered by physician. Observes for change in patient. | Administers IV medications when necessary, continually evaluate patient's neurological condition, communicates with patient, family, and physician. |
| Surgical Treatment | | | |
| 1. Operating Room | Technical skills, manipulates instruments, anticipates surgeon's needs | Technical skills, manipulates instruments, anticipates surgeon's needs | Supervision of patient safety and comfort, maintenance of aseptic technique, communicates with physician and anethetist to assess patient's condition, sometimes communicates with patient's family |
| 2. Recovery Room | Transportation to room | Continual evaluation of patient's general condition and assessment of neurological status. Technical skills: suctioning, administering oxygen Administration of medication | Same as LVN and utilizes judgment in the administration and in evaluating the patient's condition in relationship to the procedure. |

Table 2. (continued)

| Phase of Care | Personnel Providing Services | | |
|-----------------|--|---|--|
| | Nursing Assist. | LVN | RN |
| 3. Post-op Care | Assist with daily activities, ambulates, provides comfort measures | Assess patient's condition, administer medications, change the dressing, suctioning | Assess patient's condition and neurological status, communicate with patient, family, and physician, change dressing |
| Discharge | Prepare patient and his possessions to leave hospital | Answer patient's and family's questions | Answer patient's and family's questions. |

Questionnaire Data

A questionnaire to analyze the activities of the providers in the present process of neurological care was distributed to the personnel on two units. One of the units was designated as the orthopedic/neurological unit, and the other was the intensive care unit. Tables 3, 4, and 5 present data about the units and personnel polled. There were 42 personnel working on these units during the period of the study. The questionnaire was completed and returned by 26 persons. This is a return rate of 61 percent.

Table 3. Number of Personnel Polled

| Category | Patient Unit | | Total |
|--------------------|--------------------|------------|-------|
| | <u>Ortho/Neuro</u> | <u>ICU</u> | |
| Nursing Assistants | 12 | 0 | 12 |
| LVN's | 5 | 3 | 8 |
| RN's | 6 | 16 | 22 |
| | — | — | — |
| Total | 23 | 19 | 42 |

Table 4. Number of Personnel Responding

| Category | Patient Unit | | Total | Percentage |
|--------------------|--------------|-----------|-----------|------------|
| | Ortho/Neuro | ICU | | |
| Nursing Assistants | 7 | 0 | 7 | 58 |
| LVN's | 1 | 2 | 3 | 37.5 |
| RN's | 4 | 12 | 16 | 72 |
| Total | <u>13</u> | <u>14</u> | <u>26</u> | <u>61</u> |

Table 5 presents the educational background information furnished by the respondents.

Table 5. Educational Background of Respondents

| Nursing Assistants | | LVN's | | RN's | |
|------------------------|-----|--------------------|-----|----------------------------|-----|
| Education | No. | Education | No. | Education | No. |
| High School | 5 | 1 yrs. LVN program | 3 | Associate degree | 11 |
| 1 yr. college | 1 | | | Diploma | 2 |
| 1st yr. nursing school | 1 | | | Diploma with 2 yrs college | 1 |
| | | | | B.S.N. | 2 |
| Total | 7 | Total | 3 | total | 16 |
| Not responding | 0 | Not Responding | 0 | Not responding | 0 |

The breakdown of responses to each item of the questionnaire is presented in the following tables. For convenience in comparison, the responses indicating some degree of involvement were weighted. The response, "Seldom do this" was assigned a value of "1." "Usually do this" was assigned a value of "2." Three points were assigned each response of "Do this every day." The assigned values were totaled for each item to give a multiple role score for each. The multiple role scores were then averaged to provide a mean response value for every item. These means are the values presented in the tables. (Responses of "Not my responsibility" and "Need inservice" were not assigned values as they do not indicate involvement.) The values presented for the responses of "Not my responsibility" and "Need inservice" are actual number of responses for these categories. Also note when reading the tables that the responses of LVN's and RN's were combined, as there were only three LVN's responding and their responses appeared to be almost identical to those of the RN's.

Table 6 presents the mean responses for the first five items of the questionnaire. In the group of items regarding daily activities, the responses of personnel of the Intensive Care Unit closely parallel those of the nursing assistants on the other unit. This reflects the Primary care method of nursing utilized in the Intensive

TABLE 6. Mean Frequency Responses on Personnel Questionnaire -
Items 1 - 5

| Activity | Mean Response | | | Actual No. Responding | | | |
|--|---------------|----------|----------|---------------------------------|----------|---------------------|----------|
| | Ortho/Neuro | | ICU | "Not my Responsi- bility" | | "Need Inservice" | |
| | NA | Licensed | Licensed | NA | Licensed | NA | Licensed |
| 1. Hospital orientation | 0.85 | 3 | 2.21 | 3 | 1 | | |
| 2. Admission data | 0.42 | 2.4 | 2.07 | 5 | | | |
| 3. Nursing history and exam | 0.14 | 1.8 | 2.21 | 6 | 1 | | |
| 4. Answer patient's questions about | | | | | | | |
| a. diagnosis | 0.85 | 1.8 | 2.14 | 2 | 1 | | |
| b. treatment, medication | 1.0 | 2.4 | 2.21 | 4 | | | |
| c. x-rays and special procedures | 0.85 | 2.2 | 2.35 | 5 | 1 | | |
| 5. Daily activities | | | | | | | |
| a. bath, ambulation | 2.42 | 2 | 2.71 | 1 | | | |
| b. range of motion exercises | 2.42 | 1.4 | 2.42 | | | | |
| c. turn, cough, deep breathe | 2.71 | 2.6 | 2.85 | | | | |
| d. vital signs, obtain and record | 2.28 | 1.4 | 2.85 | 1 | 1 | | |

unit. The responses to Items 1 through 4 reveal a close parallel between licensed personnel of both units and a sharp contrast with the responses of the nursing assistants. Table 7 provides comparison data for items 6 through 7 of the questionnaire.

The responses in Table 7 show similar mean responses for the licensed personnel for both patient units. As these areas of neurological assessment were identified as nursing responsibilities by the Standards of Neurological and Neurosurgical Nursing Practice, it is of interest to note the low frequency value for these items. For the item on assessment of cranial nerves, three licensed personnel identified that this was not their responsibility, and three also identified the need for inservice. The item on identifying pathological reflexes also has a very low frequency value. Three licensed personnel also stated this was not their responsibility, while three identified the need for inservice.

Another significant observation from Table 7 is the response of the nursing assistants on several of the assessment items. Evaluating the level of consciousness, the sensory system, and PEARL received mean scores higher than 2. Checking reflexes, visual field, and diplopia, and identifying symptoms of increasing intracranial pressure received rather high frequency ratings from a group having

Table 7. Mean Frequency Responses on Personnel Questionnaire -
Items 6 - 7

| Activity | Mean Response | | | Actual No. Responding | | | |
|--|---------------|----------|----------|---------------------------------|--------|---------------------|--------|
| | Ortho/Neuro | | ICU | "Not my Responsi- bility" | | "Need Inservice" | |
| | NA | Licensed | Licensed | NA | Licen. | NA | Licen. |
| 6. Medications | | | | | | | |
| a. topical, oral, IM, sub-q | 0 | 2 | 3 | 7 | | | |
| b. IV | 0 | 0.4 | 3 | 7 | | | |
| 7. Neurological Assessment | | | | | | | |
| a. evaluate level of con- sciousness | 2.14 | 3 | 3 | | 1 | | |
| b. assess orientation and memory | 1.59 | 3 | 2.92 | 2 | | | |
| c. assess cranial nerves (1-12) | 0.28 | 0.4 | 1.35 | 5 | 3 | | 3 |
| d. assess muscle strength and tone | 0.42 | 1.2 | 2.21 | 5 | 1 | | 1 |
| e. evaluate sensory system | 2.28 | 2.2 | 2 | 1 | | | |
| f. check reflexes | 1.57 | 1.6 | 2.28 | 1 | 1 | 1 | 1 |
| g. identify pathological reflexes | 0.28 | .4 | 1.21 | 4 | 3 | 3 | 3 |
| h. examine eyes | | | | | | | |
| (1) PEARL | 2.14 | 2.4 | 2.21 | 2 | 1 | | |
| (2) visual field, diplopia | 1.14 | 1.6 | 1.42 | 2 | 1 | | 1 |
| i. identify symptoms of increasing intracranial pressure | 1.85 | 2.4 | 2.64 | 3 | | | |
| j. identify rales, rhonchi | 0.71 | 1 | 2.07 | 1 | | | |
| k. assess nutrition and hydration | 1.42 | 2 | 2.64 | 3 | | | |
| l. check CVP | 0.42 | .6 | 1.78 | 1 | | | |

Table 8. Mean Frequency Responses on Personnel Questionnaire -
Items 8 - 15

| Activity | "Mean" Response | | | Actual No. Responding | | | |
|---|-----------------|----------|----------|---------------------------------|----------|---------------------|----------|
| | Ortho/Neuro | | ICU | "Not my Responsi- bility" | | "Need Inservice" | |
| | NA | Licensed | Licensed | NA | Licensed | NA | Licensed |
| 8. Change dressing | 1 | 3 | 2 | 4 | | | |
| 9. Recognize relationship of these test findings with patient diagnosis | | | | | | | |
| a. electroencephalogram | .071 | 1.4 | 2.07 | 5 | 1 | | |
| b. brain scan | .071 | 1.8 | 2 | 5 | 2 | | |
| c. myelogram | .071 | 1.8 | 1.71 | 5 | 2 | | |
| d. angiogram | .071 | 1.8 | 2 | 5 | 2 | | |
| e. lumbar puncture | .071 | 1.8 | 2 | 5 | 2 | | |
| f. arterial blood gases | .042 | 1 | 2.07 | 6 | 1 | | |
| 10. Formulate goals of care | 1.85 | 1.8 | 2.35 | 2 | | | |
| 11. Initiate plan of care | 1.28 | 2.4 | 2.42 | 4 | | | |
| 12. Implement plan of care | 1.85 | 2.4 | 2.2 | 2 | | | |
| 13. Evaluate plan of care with outcome criteria | 0.42 | 2.4 | 2.28 | 5 | | | |
| 14. Communicate with patient's family | 2.57 | 2.4 | 2.71 | | | | |
| 15. Discharge teaching with the patient | 1.14 | 3 | 1.14 | 1 | | | |

only a high school education. The problem here may lie in identification of role responsibilities or with confusion of the questionnaire meaning. The response frequencies for the remainder of this section of the questionnaire are presented in Table 8.

The responses from this section of the questionnaire again reveal similar frequencies between the licensed personnel of both units. An interesting response is that the nursing assistants reported a higher frequency of communication with the patients family than did the licensed personnel on the orthopedic/neurological unit. The nursing assistants also reported a higher frequency on formulating goals of care than did the licensed personnel on that unit. Again, this presents a possibility of questionnaire confusion or uncertainty of role responsibilities.

The investigator decided to determine if the role perceptions of the intensive care personnel and licensed personnel from the other unit studied were similar. To do this, a rank-order test of correlation (Rho) is necessary. To utilize this formula, the multiple-role scores of each personnel group were averaged because the groups were of different sizes. The deviations between the scores for the two groups were determined for each item. The appropriate numbers were then plugged into the following formula.

$$r = 1 - \frac{6 \Sigma D^2}{N(N^2 - 1)}$$

r = rank order correlation

Σ = raw sum of

D = difference between ranks

N = number of paired ranks

(Treece and Treece 1973)

This formula identifies the degree of correlation between the rankings. A perfect correlation would be 1. Anything less than a perfect correlation would be less than 1. An r of .30 would be a moderate correlation, and an r of .50 to .70 would be very good. The information plugged into the equation is indicated below:

$$r = 1 - \frac{6(24.68)}{38(38^2 - 1)} = 1 - \frac{148.08}{54834} = 1 - .00269 = .99731$$

A correlation of 0.99731 is almost perfect. This high degree of correlation indicates that even though the work situation is different for the intensive care personnel, and the personnel from the orthopedic/neurological unit, their role perceptions are almost identical. To determine if others perceived the same role responsibilities, one can view the responses on the other section of the questionnaire.

This section of the questionnaire asks the respondent to identify who provides a particular service if he does not do this himself. These responses are presented in the following tables. Note that the number of responses include the column stating "I do this." Many respondents identified more than one category as being responsible for some of the activities. Table 9 identifies the number of respondents indicating a category as having the responsibility for the item. Alongside this is the frequency for that item (when available) as identified by that category. With this comparison, one can see if those identified by others as being responsible for an activity gave this item a high frequency rating. The first five items of this questionnaire are included in Table 9.

Table 9. All Respondent's Perceptions of Those Responsible for Selected Activities Compared to Each Category's Frequency Value for that Activity

| Activity | Ward Clerk | PERSONNEL CATEGORIES | | | | | | | | | |
|---------------------------------------|------------|----------------------|-----------|-------------|-----------|------|------|-------------|-----------|-----------|-----|
| | | Nursing Assistant | | LVN's | | | RN's | | | Physician | |
| | | Per-ception | Frequency | Per-ception | Frequency | O/N | ICU | Per-ception | Frequency | | O/N |
| 1. Admission | | | | | | | | | | | |
| a. Hospital orientation | 2 | 5 | 0.85 | 2 | 3 | 2.21 | 16 | 3 | 2.4 | | |
| b. Physical assessment | 1 | 4 | 0.14 | 3 | 1.8 | 2.07 | 16 | 1.8 | 2.07 | 4 | |
| 2. Answers patient's questions | | | | | | | | | | | |
| a. diagnosis | | 2 | 0.85 | 2 | 1.8 | 2.14 | 10 | 2.14 | 2.14 | | |
| b. treatment | | 1 | 1.0 | 4 | 2.4 | 2.21 | 14 | 2.4 | 2.21 | | |
| c. diagnostic tests | | 4 | 0.85 | 7 | 2.2 | 2.35 | 13 | 2.2 | 2.35 | | |
| 3. Bath | | 10 | 2.42 | 4 | 2.0 | 2.71 | 14 | 2.0 | 2.7 | | |
| 4. Range of motion exercises | | 8 | 2.42 | 4 | 1.4 | 2.42 | 17 | 1.4 | 2.4 | | |
| 5. Assist Dr. with special procedures | | | | 7 | | | 20 | | | | |

Note: Perceptions are presented as the actual number of respondents indicating this category. Frequencies are given as frequency values presented originally in Tables 6 - 8. Only those categories are presented that received any responses.

Table 9 illustrates that in this portion of the questionnaire, some uncertainty of role responsibilities exist. For example, five respondents viewed hospital orientation as the nursing assistant's responsibility, while the nursing assistants had only a 0.85 frequency value for this item. Similarly, only two perceived the LVN as providing this service, but the LVN's frequency value was very high. The perception and frequency values for the RN on this item are the only ones which appear to correlate. But, on the next item, physical assessment, there is a sharp contrast with sixteen perceiving this as the RN's function, while they gave it a frequency value of 1.8 to 2.07. Also, note here that four see this as the physician's responsibility. The other items seem to show agreement between perceptions and frequencies, e.g., ten perceive nursing assistants as giving baths and this has a frequency value of 2.42. Table 10 presents the perceptions of all personnel compared to the frequency values for the remaining items on this section of the questionnaire.

Table 10. All Respondent's Perceptions of Those Responsible for Selected Activities Compared to Each Category's Frequency Value for that Activity

| Activity | PERSONNEL CATEGORIES | | | | | | | | Physician |
|--|----------------------|------------|-------------|------------|------|-------------|------------|------|-----------|
| | Nurs. Asst. | | LVN | | | RN | | | |
| | Per-ception | Fre-quency | Per-ception | Fre-quency | | Per-ception | Fre-quency | | |
| | | | O/N | ICU | | O/N | ICU | | |
| 6. Physical assessment | | | | | | | | | |
| a. Level of consciousness | 3 | 2.14 | 6 | 3.0 | 3.0 | 17 | 3.0 | 3.0 | 2 |
| b. PEARL | 3 | 2.14 | 5 | 2.4 | 2.21 | 14 | 2.4 | 2.21 | 1 |
| c. deep tendon reflexes | | 1.57 | 4 | 1.6 | 2.28 | 10 | 1.6 | 2.28 | 6 |
| d. Babinski reflex | | 0.28 | 4 | 0.4 | 1.21 | 12 | 0.4 | 1.21 | 5 |
| e. sensory (pain, touch) | 1 | 2.28 | 5 | 2.2 | 2.0 | 16 | 2.2 | 2.0 | 3 |
| f. nutrition, hydration | 3 | 1.42 | 5 | 2.0 | 2.64 | 16 | 2.0 | 2.64 | 1 |
| 7. Evaluate diagnostic findings in relation to patient diagnosis | | 0.71 | 2 | 1.6 | 1.97 | 11 | 1.6 | 1.97 | 9 |
| 8. Devise nursing care plan | | 1.28 | 5 | 2.4 | 2.42 | 21 | 2.2 | 2.42 | |
| 9. Participate in plan of care | 10 | 1.85 | 11 | 2.4 | 2.20 | 19 | 2.4 | 2.2 | 5 |
| 10. Evaluate outcomes of care | 2 | 0.42 | 5 | 2.4 | 2.28 | 20 | 2.4 | 2.28 | |
| 11. Identify expected outcomes of care | 2 | 1.85 | 3 | 1.8 | 2.35 | 17 | 1.8 | 2.35 | |
| 12. Communicate with patient's family | 7 | 2.57 | 9 | 2.4 | 2.71 | 18 | 2.4 | 2.71 | 8 |
| 13. Discharge teaching | 2 | 1.14 | 5 | 3.0 | 1.14 | 18 | 3.0 | 1.14 | 2 |

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Note: Only those categories are presented that received any responses.

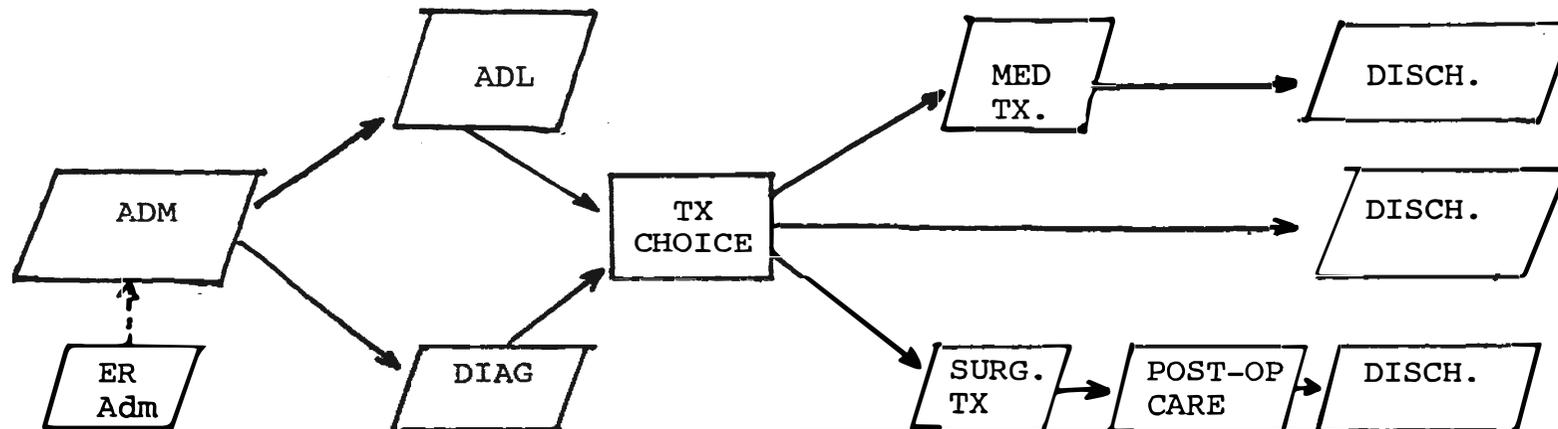
In this portion of the questionnaire, some contradictions become evident. The nursing assistants gave moderately high frequency ratings to several of the assessment skills while only one of three respondents (including themselves) identified this as their responsibility. Another contradiction is the perception of twelve persons that RN's check the Babinski reflex, correlated with the frequency values for identifying pathological reflexes, one identifies a frequency value of 0.4 - 1.21 for this item. From this section of the questionnaire, more items were viewed by the respondents as the physician's responsibility. After analysis and compilation of the data, a conceptual model for a system of neurological patient care was developed.

Model

This model identifies the phases of patient progression, the nursing personnel, and their required competencies in each phase. This model is presented in Figure 7 and Tables 11 - 13. The model in Figure 7 closely resembles the ones presented earlier for the individual patients observed. This is because of the many similarities in all the patterns of patient progression.

Education and evaluation methodologies are an important aspect of the model presented. Educational needs are identified in each of the competency areas for each level of nursing personnel. In the area of human competencies, communication skills are emphasized from the beginning levels of the nursing assistant to therapeutic interactions for the registered nurse. Functional and conceptual competencies require education in knowledge and skills and their utilization.

The technique for attaining these educational needs requires identifying goals mutually with the personnel. As Mackay and Ault (1977) identify, people learn what they need and value and will utilize. The teaching methodology, thus, must identify the personnel's goals and present them in a manner that will allow for practice and utilization. Therefore, conceptual knowledge presented to the registered nurse should be reinforced by practice situations with immediate validation for increased learning.



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Various levels of nursing personnel are involved in each phase of care. Their competencies are described in the tables which follow. Evaluation is a continuous process in this system. For significant feedback, evaluation methodology identifying outcome criteria for each of the listed competencies should be developed by a facility utilizing this system.

Figure 7. A Conceptual Model of a System of Neurological Patient Care.

Table 11. Competencies of Nursing Assistants

| Phase of Care | Human | Functional | Conceptual |
|----------------------------|--|---|---|
| Admission | Beginning communication skills (what not to say) Helpful attitude | Basic skills - TPR, BP; Provide supplies - comfort measures | Recognize overt changes - notify proper personnel; Identify signs of anxiety |
| Activities of Daily Living | Avoid false reassurance | Provides hygiene measures; Turning, ambulation, practices correct technique for care of patients with neurological disorders, e.g., traction, exercises, turning, enforces restrictions due to diagnosis. | Aware of patient's tentative diagnosis and the limitations for this diagnosis. Identifies change in patient's general condition |
| Diagnostic | Allows patients to verbalize anxiety | Physically prepares patient for specific diagnostic procedures - NPO, enemas. Enforces restrictions after test, e.g., lie flat, keep head elevated, NPO, etc. Monitors VS after test. | Identifies patient's need for information about procedure and alerts those responsible |

Table 11. Competencies of Nursing Assistants (continued)

| Phase of Care | Human | Functional | Conceptual |
|-------------------------------|--|--|--|
| Medical Treatment | Utilize communication skills in interactions with patient and family | Assists with daily activities: hygiene, ambulation, comfort measures, areas for patients in traction, arranges care schedule to provide maximum benefit from treatment | Alerts personnel to changes regarding patient's general condition or area of treatment |
| Surgical Treatment Post-op | Utilizes communication skills to be supportive, encourage independence | Hygiene, ambulation, turning, coughing, deep breathing, enforces restrictions-e.g., no showers, walk straight. | Identifies overt signs of complications and alerts proper personnel |
| Discharge | | Prepare patient and possessions for leaving | Recognizes unwillingness to be discharged, alerts proper personnel |
| Educational requirements | Instruction in beginning communication skills | Basic nursing assistant training with supplement in area of handling neurological patients - basic explanation of diagnostic and surgical procedures | Instruction on signs significant for neurological patients and indicative of impending complications |

Table 12. Competencies of LVNs

| Phase of Care | Human | Functional | Conceptual |
|----------------------------|--|---|--|
| Admission | Communication - instruct in regard to ward procedures | Administer medications, general assessment skills | Identifies overt and some covert symptoms significant to patient's treatment |
| Emergency Admission | Supports and calms patient and family | Brief history and assessment. Critical observations, ability to carry out orders, correct care provided for initial treatment of neurological accidents | Understands relationship of treatment to patient's symptoms |
| Activities of Daily Living | Communication - Supports and answers questions regarding condition treatment | Administers ordered medications, and treatments - explaining to patient the importance and significance of these in the treatment plan, recording treatments, meds, and assessments | Identifies significant neurological changes in relationship to diagnosis. Communicates needs of patient and changes to proper personnel and physician |
| Diagnostic | Explains procedure to patient and family; answers questions | Administers medications for testing procedures, observes for sensitivity reactions following medications and procedures | Identifies and reports significant changes following procedure. Recognizes implication of neurological test findings in terms of diagnosis and treatment |

Table 12. Competencies of LVNs (continued)

| Phase of Care | Human | Functional | Conceptual |
|----------------------------|---|--|--|
| Medical Treatment | Identifies for patient the purpose of the treatment | Assists physician with procedures, administers medications and treatment as ordered | Recognizes expected results of medication and treatment plan as they will effect the neurological disorder. |
| Surgical Treatment Post-op | Supportive of patient and family, answers questions | Assesses changes in neurological status, administers medication. Change dressings, suction | Understands significance of surgical procedure. Aware of expected outcome and possible complications, their significance and why they occur. |
| Discharge | Encourage questions | Explain importance of follow-up and continuation of treatments ordered | Identifies patient's degree of understanding and awareness of conditions |
| Educational Requirements | Effective communication skills - review possibly | LVN licensure current continual update on meds and new techniques - particularly their purpose and effects (both desired and undesired for the neuro patients) | Anatomy and Physiology - review - focus on the cause of disorders - material on neurological assessment |

Table 13. Competencies of RN

| Phase of Care | Human | Functional | Conceptual |
|----------------------------|---|---|---|
| Admission | Identify patient's anxieties and utilize therapeutic communication | Initial patient assessment | Recognize signs, neurological symptoms, and their implications in diagnosis |
| Emergency Admission | Supports and explains procedures | Complete neurological assessment - Care and emergency treatment for patients with possible neurological disorders | Identifies implications of neurological change. |
| Activities of Daily Living | Continual support and identification of patient and family needs | Enforces treatment and procedures - continual assessment to detect changes | Synthesizes assessments to identify neurological deficits |
| Diagnostic | Explains purpose and procedure to patients and families - supports and identifies fears | Supervise proper preparation for testing procedure | Evaluates test results to correlate findings with assessment observations |

Table 13. Competencies of RN (continued)

| Phase of Care | Human | Functional | Conceptual |
|-------------------------------|---|---|---|
| Medical Treatment | Identifies purpose and method of treatment for patient and family | Supervises follow through on orders for medication and treatment. Advanced technical skills | Evaluates patient's response to treatment in relationship to expectations. Identifies neurological changes - sets goals of care to meet needs and implements plan of care |
| Surgical Treatment Post-op | Supportive - identifies patient and families psychological needs | Special technical skills. Draw art. blood gases. Advanced assessment skills to recognize changes. | Analyze and adjust plan of care to meet patient's changing need. |
| Discharge | Effective teaching communications, empathy | Discharge teaching - in areas of self-care | Identify client's level of understanding and needs, . . . adjustment of communications and resources utilized |

Table 13. Competencies of RN (continued)

| Phase of Care | Human | Functional | Conceptual |
|--------------------------|---|--|---|
| Educational Requirements | Advanced therapeutic communication skills - exposure to teaching techniques | Clinical experience with instruction in skills required for neurological patients. Education in supervisory skills | Experience and practice sessions in problem-solving. Analyze situation where personnel have utilized this and how it was effective. Sessions identifying symptoms, their significance and implications for treatment (i.e., disc disease, symptoms of increasing pressure in relation to tumor, trauma, location of brain disorder, hemorrhage) |

Summary

This chapter has presented an analysis of the data collected to provide information on the present process of neurological patient care. An analysis of the present situation is necessary before a reliable model for a system of care can be identified. The material presented attempts to provide significant evidence for justification of such a model of care.

An analysis of census reports identifies a monthly patient population of 1,360 patients. For this time period, the monthly average of neurological patients was 78, or 5.7 percent of the total patients requiring care. For a more realistic picture of the amount of services required for these patients, it is necessary to determine the number of patients receiving neurological care at any given time. To determine this, the average length of stay for neurological patients during this period was calculated mathematically and found to be 11.1 days. Therefore, one can conclude that for the 518 neurological patients in the 150-day period evaluated, there were approximately 38.3 neurological patients in the hospital on any given day. This should establish a need for a systematic regime of care for these patients who require many specialized technical skills and advanced skills of observation, assessment, and judgment.

To determine the services provided to these patients, observations were made of several patients' progressions through the hospital stay.

Basic phases of care for the neurological patient resemble those for many other patients. The phases identified were: admission, activities of daily living, diagnostic procedures, treatment (medical or surgical), and discharge. The observations also identified services provided to the neurological patients. The summary of these, although very generalized, identifies competencies for the various levels of personnel which may be categorized as human competencies, functional competencies, and conceptual competencies. The specialized aspects of these competencies becomes evident on reviewing the criteria established by the Standards of Neurological and Neurosurgical Practice and on analyzing the competencies identified by the personnel completing the questionnaire on neurological patient care.

The questionnaire on competencies in neurological patient care was distributed to the personnel on two of the hospital units. Although the personnel were involved in widely differing work situations, the licensed personnel of both units ranked the performance frequency of these competencies at a very high degree of correlation. This indicates that their perceptions of their role in neurological patient care are almost identical. Although their role

perceptions are similar, certain areas of neurological **assessment** rank noticeably low on the frequency ranking. Certain personnel responded that these skills were the responsibility of the physician. These are areas of concern as these skills were identified as necessary competencies by the Standards of Practice. Varying responses from the nursing assistants also indicates a need for clarification of responsibilities and limitations. Several areas for in-service were also identified through the questionnaire.

Compilation of census and questionnaire data with data obtained from patient observation led the investigator to develop a system of neurological patient care. This system identifies phases of patient progression, the nursing competencies necessary in each phase and education and evaluation methodologies for utilization in the system.

The education methodology focuses on personnel goal identification. The learning process is then viewed as centering on presentation of knowledge in a manner to allow for a learner input, practice, and utilization with evaluation and feedback according to identified outcome criteria. Conclusions and implications formulated from the data collected are presented in Chapter V.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

A descriptive study was devised and implemented to determine if a conceptual model for a system of neurological patient care was feasible. This chapter presents a summary of the methodology utilized, conclusions derived from the data, implications for utilizing the data, and recommendations for further study.

Summary

With the present situation in hospitals, nurses are often responsible for various administrative responsibilities as well as nursing care for patients with widely varying diagnoses. The neurological patient requires personnel with specialized technical skills and advanced assessment abilities to recognize symptoms and changes which may seem insignificant to most nursing personnel. The nurse caring for the wide variety of patients may not possess these abilities as a result of too many demands placed on her by the broad scope of patients.

One purpose of this study was to analyze the present process of neurological patient care. Other purposes were to identify the progression of the neurological patient within

the health care system and to identify the nursing personnel and their competencies during this progression. Another goal was to identify the educational requirements to meet the competencies and incorporate this group of data into a model of a neurological patient care system.

The review of literature examined systems, specifically the components, and techniques of analysis and design as applicable to health care. Health care has begun to utilize systems methodology to provide a plan for action for the clients and providers. Also included in the review of literature was information on competencies, neurological competencies, and education and evaluation methodologies.

The setting for this study was a 315 bed hospital in Central Texas located in a town of 100,000. The population of the study was the facilities, providers, and clients involved in neurological care.

Analysis of the census data revealed that the hospital had a monthly average of 1,360 patients. The neurological patients accounted for 5.7 percent, or 78, patients each month. Additional census information revealed that for the stated five-month period, there were approximately 38 neurological patients in the facility on any given day. Several neurological patients were observed to identify general phases in their progression of care. These observations also identified the personnel and competencies in each phase of care.

Additional information concerning the personnel and competencies was obtained through distribution of a questionnaire. The questionnaire was distributed to 42 personnel on the two units studied, with a return rate of 61 percent. A comparison of the responses revealed that the licensed personnel of both units showed a high degree of correlation in the role perceptions. However, low frequency areas of nursing activity could be identified from the responses. In some areas of care, personnel were uncertain of their responsibilities to the patient. This was evidenced primarily by a low frequency ranking on some of the activities identified by the Standards of Practice as the neurological nurse's responsibility. This discrepancy is again evidence of a need for personnel with specialized neurological skills which would be emphasized in a system of care. The findings of this study thus indicate that a model for a formal system of neurological care, identifying patient progression and personnel competencies, might be useful in assuring quality of care by clarifying personnel roles and responsibilities.

Conclusions

An analysis of the data collected concerning the present process of neurological patient care leads to several conclusions:

1. The study hospital provides services for a substantial number of neurological patients.
2. The present process involves a consistent pattern of patient progression during the hospital stay.
3. Licensed personnel in different work situations have very similar role perceptions.
4. A need exists for clarification of job responsibilities as identified by Cantor (1975).
5. Skills and competencies for personnel need to be identified and the educational requirements identified. This is supported by the data collected from the personnel as well as Abdellah (1973, p. 66) and the Congress of Nursing Practice (1977, p. 6).
6. A conceptual model for a system of neurological patient care can be developed identifying phases of patient progression, nursing competencies, and education and evaluation methodologies to attain these competencies.

Implications

Implications for utilization of the data obtained in this study are:

1. Role expectations need to be clearly defined.
 - A. These need to include educational requirements.

B. Required competencies and technical skills must be identified.

C. Inservice in this area should identify the role perception discrepancies discussed in this study.

2. Outcome criteria for the competencies and skills should be developed for an effective evaluation methodology.

A. Inservice should be provided to present the required competencies to personnel.

B. Inservice should be provided to allow personnel to attain competencies, when possible.

3. An effective method of communication should be established to identify that patients' needs are being met and by whom.

4. Hospital administration and service agencies should be made aware of discrepancies between role perceptions and practice of personnel.

5. Physicians in neurological care should be informed of the role perceptions of nursing personnel caring for neurological patients.

6. Community educational institutions might identify deficits in their curriculum which lead to discrepancies in role perceptions.

Recommendations

The following recommendations are made for further investigation in this area:

1. Client and physician's perception might provide further insight into system development.
2. Similar investigations might be carried out in a larger institution.
3. Similar investigations might be carried out in other specialized areas of patient care.
4. That the system be implemented, including educational and evaluational methodology.
5. That the system model be implemented with consistent personnel and facilities providing the services for neurological patients.
6. That a repeat study be done after six months' implementation of the system to evaluate a change in role perceptions.
7. That repeat studies determine if the length of the neurological patient's hospital stay decreases after implementation of the system.

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APPENDIX A

PERMISSION FOR THE STUDY

92
TEXAS WOMAN'S UNIVERSITY
DALLAS, TEXAS 75235



COLLEGE OF NURSING

March 10, 1977

Ms. Cheryl Humphrey

Dear Ms. Humphrey:

The Dallas Center Sub-Committee for Human Research has approved your proposal for "A Conceptual Model of a System of Neurological Patient Care." Following acquisition of agency approval you may now proceed with your data collection as planned.

Sincerely,

A handwritten signature in cursive script that reads 'Geri Goosen'.

Geri Goosen, R.N., M.S.
Chairman of Human Research
Dallas Center

cc: Dr. Phyllis Bridges
Graduate Dean

GG:js

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AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Hillcrest Baptist Hospital

GRANTS TO Cheryl Humphrey

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

A Conceptual Model of a System of Neurological Patient Care

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other: _____

Date 4/24/77

Victoria Grayfield RN
Signature of Agency Personnel

Cheryl J. Humphrey
Signature of student

Merna M. Counts R.N., Ph.D.
Signature of Faculty Advisor

*Fill out and sign three copies to be distributed as follows: Original -- Student; first copy -- agency; second copy -- T.W.U. College of Nursing.

APPENDIX B

QUESTIONNAIRE

APPENDIX B

The following questionnaire has been developed to collect information for a research project on "Developing a System of Neurological Patient Care." Any system requires input from those who utilize it. Therefore, the information here will reflect the actions and attitudes of these people. Your input is necessary for the success of this project, and you can indicate your willingness to participate by completing the questionnaire and returning it to the designated area on your unit by Wednesday. Please do not include your name on this sheet, identify yourself only by staff position and educational background in the provided spaces. There is no penalty for not completing the questionnaire, but your input will be of much help in devising a system of neurological patient care that reflects the needs and abilities of those involved.

Thank you for participating in the study. In several weeks, I will provide feedback from the information obtained from the questionnaire.

Cheryl Humphrey

APPENDIX B

Staff position _____

Educational background _____

In the following outline, place an X in the appropriate square that indicates your responsibilities in assisting the neurological patient. You are not expected to function in all of the activities, but please fill out as completely as possible.

APPENDIX B

| Activity | Seldom do this | Usually do this | Do this every day | Not my responsibility | Need inservice |
|---|----------------|-----------------|-------------------|-----------------------|----------------|
| 1. Hospital orientation | | | | | |
| 2. Admission data | | | | | |
| 3. Nursing history and exam | | | | | |
| 4. Answer patient's questions about | | | | | |
| a. diagnosis | | | | | |
| b. treatment, medication | | | | | |
| c. x-rays and special procedures | | | | | |
| 5. Daily activities | | | | | |
| a. bath, ambulation | | | | | |
| b. range of motion exercises | | | | | |
| c. turn, cough, deep breathe | | | | | |
| d. VS-obtain and record | | | | | |
| 6. Medications | | | | | |
| a. topical, oral, IM, sub-q | | | | | |
| b. IV | | | | | |
| 7. Neurological assessment | | | | | |
| a. evaluate level of consciousness | | | | | |
| b. assess orientation and memory | | | | | |
| c. assess cranial nerves (1-12) | | | | | |
| d. assess muscle strength and tone | | | | | |
| e. evaluate sensory system (touch, pain, temperature) | | | | | |
| f. check reflexes | | | | | |
| g. identify pathological reflexes | | | | | |
| h. examine eyes | | | | | |
| (1) PEARL | | | | | |
| (2) visual fields, diplopia | | | | | |
| i. identify symptoms of increased intracranial pressure | | | | | |
| j. identify rales, rhonchi | | | | | |
| k. assess nutrition and hydration | | | | | |

APPENDIX B

| Activity | Seldom do this | Usually do this | Do this every day | Not my responsibility | Need inservice |
|---|----------------|-----------------|-------------------|-----------------------|----------------|
| 1. check central venous pressure | | | | | |
| 8. Change dressings | | | | | |
| 9. Recognize relationship of these test findings with patient diagnosis | | | | | |
| a. electroencephalogram | | | | | |
| b. brain scan | | | | | |
| c. myelogram | | | | | |
| d. angiogram | | | | | |
| e. lumbar puncture | | | | | |
| f. arterial blood gases | | | | | |
| 10. Formulate goals of care | | | | | |
| 11. initiate plan of care | | | | | |
| 12. implement plan of care | | | | | |
| 13. evaluate plan of care with outcome criteria | | | | | |
| 14. communicate with patient's family | | | | | |
| 15. discharge teaching with patient | | | | | |

APPENDIX B - QUESTIONNAIRE

Following is a similar but very brief outline of activities necessary in caring for the neurological patient. If you do not perform the listed item, please identify the personnel you think do provide this service. It is not necessary to question your fellow workers, simply check who you think does this.

