PLANNING A PEDIATRIC INTENSIVE CARE UNIT: A NURSING VIEWPOINT

by

Marita Silverman Bowden

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This thesis has been approved on the date shown below:

Agnes M. Aamodt Ph.D. Nov. 8, 1972

AGNES M. AAMODT
Associate Professor of Nursing

Date

DEDICATION

This thesis is fondly dedicated to my husband, Pete. His love and support during this endeavor have sustained me through many trying moments. He has truly endured more than his share during our precious first year of marriage.

ACKNOWLEDGMENTS

My parents have always been a special influence in my life. Their support, trust, and encouragement have guided me throughout my life experiences. To them I owe more than I can ever fully express.

The people directly connected with the pursuit of this research are numerous. Dr. Agnes M. Aamodt, as chairman of the thesis committee, guided this study from its inception. Dr. Janelle C. Krueger and Dr. Gladys E. Sorensen also served as members of the committee. Mrs. Betty Koff, an original member of the committee, offered many suggestions about pediatric intensive care. I am grateful to each of them for the vast amount of attention, assistance, and advice they devoted to me in the completion of this study. A special debt of gratitude goes to all the nurses who participated in this study.

The American Soldiers who, as patients at the 8th Field Hospital and the 95th Evacuation Hospital, Republic of Vietnam August 1970 to July 1971, displayed reverence for life and dignity in death so far away from home. This I will remember above all else.

The pursuit of graduate education could not have been undertaken without the resources of the United States Army Nurse Corps.

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ABSTRACT

The purpose of this investigation was to learn what nurses say is necessary to assist them in providing better care to seriously ill children. The ideas of the nurses were used to show how such information can be translated into guidelines for a pediatric intensive care unit for a general hospital. The field of nursing research lacks descriptive studies involving the design of patient care facilities.

A supporting framework for this study integrates selected aspects of management principles, hospital design, and organizational change theory. In addition, a model of the planning process assisted the investigator in examining the component steps.

Thirty-six registered professional nurses constituted the sample. The investigator utilized an open-ended questionnaire to obtain the information from the nurses in the verbatim context.

Categorization of the data yielded five areas of concern to the nurses which included: patient care, equipment and supplies, policies, attitudes, and environment-space and esthetics. These categories of concern were directed toward three distinct groups of people: the nurses as a group, the seriously ill children, and the parents.

These two parameters (category and direction) provided the basis of a simple chart used for presentation of the data. To obtain a general overview of the relationships formed by the data, the investigator developed a three dimensional model utilizing the categories of concern, the direction of concern, and a third parameter--operational sequence, including expressions of concern, implications, and decisions and implementations.

Results of this investigation indicated that the specialized knowledge of nurses can be interpreted into guidelines or design criteria for planning new patient care facilities.

CHAPTER I

BACKGROUND OF THE STUDY

Nurses have often been heard to exclaim, "Why weren't we asked for our ideas when this unit was in the planning phase?" What exactly is involved in the design of patient care areas? How does the design affect the staff and patients?

The study here reported is based on two concerns about patient care which have interested this nurse for several years. An attentiveness to problems related to planning for patient care areas developed during a unit management course as a senior student in a baccalaureate program. A concern about the practice of caring for seriously ill children in adult intensive care units originated three years ago when the investigator was a staff nurse in a combined medical and surgical intensive care unit of a large general hospital. Interest in both of these areas continued to be a paramount focal point during a recent cross cultural nursing experience involving both children and adults in the same clinical setting.

While working in the intensive care unit, the nurse researcher began to ask the following questions regarding the care of children in such an area: What effect did the

"strangeness" of an intensive care unit have on children? Why did some of the nurses display reluctance in caring for a child in the intensive care unit? Why were the pleas of "how soon can the child go back to pediatrics?" voiced? Did the sights and sounds of dying and death of adults in such a unit have an effect on the child?

Current trends in pediatric practice indicate that the seriously ill child is, ideally, best cared for on the pediatric unit where the expertise, both medical and nursing, is already available (Harper and Varakis, 1970; Appleyard and Joseph, 1970; Barbara and DiDonato, 1971; May, 1972).

A common practice in Western hospitals is to admit children to their own specially equipped area, the pediatric unit. Why, then, are seriously ill children admitted to the adult intensive care unit? Reasons primarily given for this practice include staffing difficulties, economic resources, and the availability of sophisticated equipment. Adult intensive care units usually have no pediatric nurse on the staff.

When intensive care units became available in hospitals, children as well as adults were transferred to the unit when their management became too difficult for the general ward. Thus, nurses became less conditioned to the care of the seriously ill patient.

Conceptual Framework

> All decisions should be made as low as possible in the organization. The Charge of the Light Brigade was ordered by an officer who wasn't there looking at the territory (Townsend, 1970: 27).

The conceptual basis of this study is an integration of selected aspects of management principles, hospital design, and organizational change theory. The ideas utilized include the interaction-influence system as purported by Likert (1961), a conceptual framework for hospital design as envisioned by Souder et al. (1964), and applying behavioral science for organizational change as developed by Bennis and Peter (1966).

The model of the interaction-influence system puts decision-making at the appropriate level. Likert (1961), in his book, New Patterns of Management, notes that influence in the decision-making process from the lower echelons should flow vertically and horizontally equally with the influence which filters from the top. The different levels within the organization should be thought of as coordinating or linking larger and smaller work groups rather than in terms of the amount of authority belonging to each level (Likert, 1961:186). Thus, a small group of experts should be able to exert more influence on an important decision than the personnel at the administrative level. "Experts" in this sense, are construed to mean people at the working or operational level of the

organization. If the decision is made at too low a level, it may affect other groups adversely; these groups could demand involvement in the decision making process. If the decision is made at too high a level, power could be exerted from beneath to change and undermine the decision. Information dealing with problems, experiences, suggestions, objectives, methods, processes, and technologies is a necessary part of this process (Likert, 1961:182).

Group decision making has the advantage over individual decision making because it provides a series of checks and balances. Accountability is placed where it belongs.

Souder et al. (1964) have modeled their information sources and decision groups in the hospital setting after Talcott Parsons' theory of social organization. To summarize, Souder describes three levels of decision making groups: technical, managerial, and organizational. According to Souder, the technical level constitutes the direct working operation. Members of this group consist of nurses, doctors, and ancillary personnel. Administrative personnel constitute a control and service function at the managerial level. At the institutional level, decision making is done by the governing board (Souder et al., 1964:31). For the purposes of this study, only the managerial and technical levels are considered.

In order to make the planning process a rational and practical endeavor, the researcher must seek out the appropriate level of personnel. Souder et al. feel that questions regarding the daily operational procedures, staffing, balance between functions, physical environment, needs for staff satisfaction are most appropriately answered at the managerial level. The technical level provides the most information pertaining to procedures, equipment, and arrangements for patient care (Souder et al., 1964:32). Though the investigator disagrees with the assignment of labels, the line of questioning, as noted above, is deemed appropriate for nurses involved in the planning process.

The role of the nurse in planning has changed drastically over the last two decades. The advent of a new and varied technology as well as the increased body of knowledge affecting patient care has given nurses different responsibilities in the provision of patient care. Patient care, however, need not be limited to the direct physical care and emotional support. Nurses can also make their contribution to patient care by working as members of an interdisciplinary team which collaborates to plan and create suitable areas for patient care to be rendered.

Professional nurses, no matter what their area of specialization, will probably be asked to give their ideas for the improvement of patient care areas. Nurses will

probably not dictate change but will act as agents of change in their capacity as members of collaborative planning teams. The professional nurse cannot act alone but must take into consideration a variety of outside influences from the community. Essentially, this is planned change, involving mutual goal setting, equal power among all members of the team, and deliberateness on all sides (Bennis and Peter, 1966:302).

The key to planning at any level is to involve the person who will be most affected by the proposed changes. Nurses do have varied and interesting ideas. The best way to determine the areas of concern is to ask the nurses who are involved. The nurses' involvement in the planning process can be demonstrated from the following model (Figure 1) after Bennis and Peter (1966:317) and modified by this investigator.

In the original diagram used by Bennis and Peter, the change agent entered into a collaborative relationship before specialized knowledge could be ascertained and changes recommended. The modifications made by this investigator reflect the idea that one must have knowledge and ideas for change before satisfactory collaborative relationships result. The intent of this investigation was to obtain knowledge from a sample of nurses and examine their ideas for potential criteria for a pediatric intensive care unit.

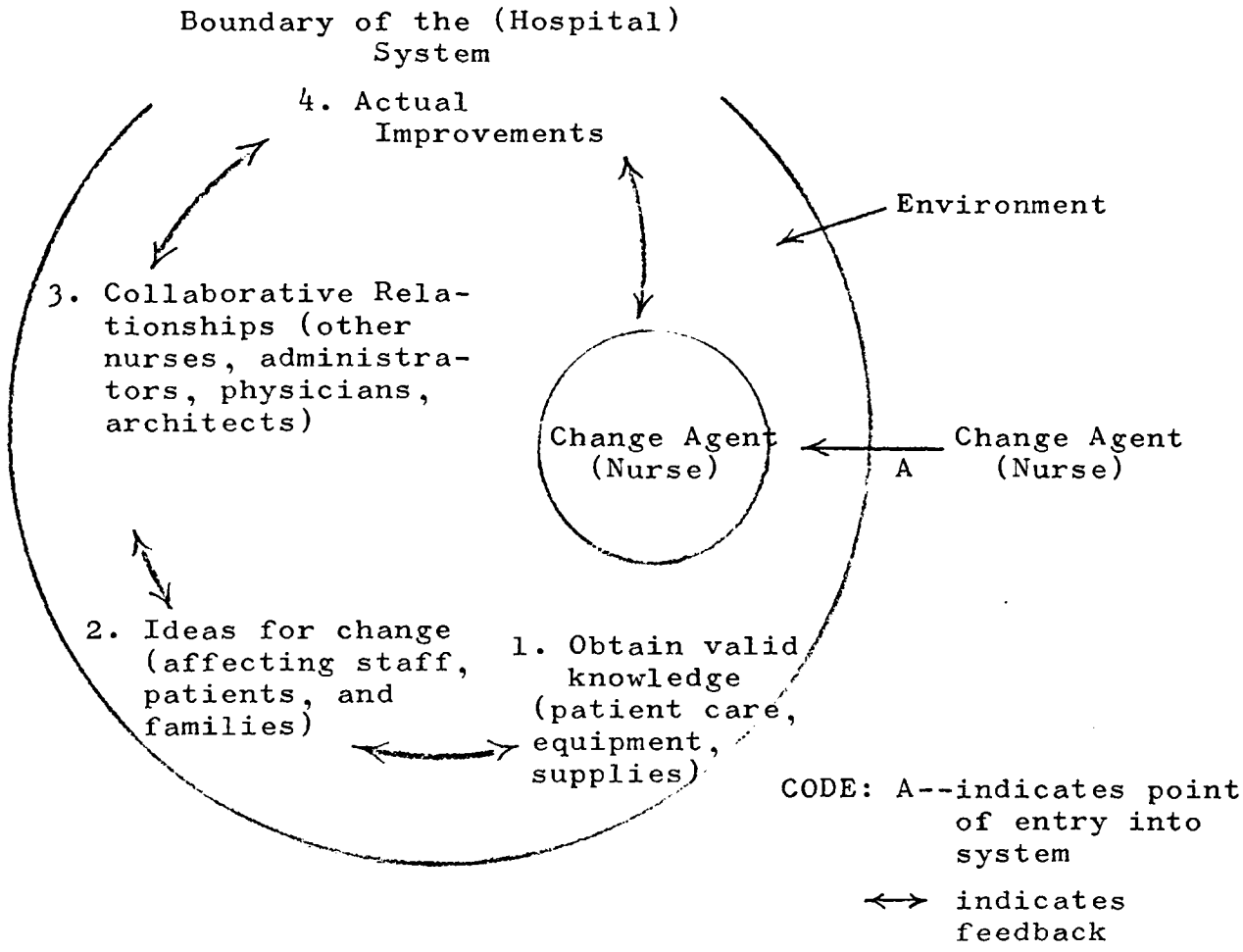


Figure 1. Model of the Planning Process for a Patient Care Facility

In summation, Likert and Souder et al. advocate utilizing the appropriate level of personnel as information sources for suggesting possible changes within the organization which will ultimately affect them. Likert, however, goes one step further and suggests that making the ultimate decision is the task of the group which the change affects. Souder et al. make the distinction that each level of personnel has certain specific knowledge which needs to be channeled to the decision making power. Bennis and Peter offer a method which aids the planning and decision making processes to create change. Their model appears to be suitable for following either Likert's proposal or Souder et al.'s suggestion.

Statement of the Problem

The problem, upon which this study is based, focuses on the relationship of nurses' ideas to the design of an intensive care unit for children.

Purpose of the Study

The purpose of this investigation is threefold: to learn what nurses say is necessary to care for seriously ill children; to gain knowledge regarding what influences these factors could have on the design of a pediatric intensive care unit for children; and to propose a series of guidelines or recommendations in planning and designing an intensive care unit for children.

Definition of Terms

The following terms are defined as they are to be utilized throughout the report of this study:

1. Intensive care unit--a self contained specialty area for seriously ill or critically ill adult patients who require deliberate, planned, and highly skilled nursing and medical management.
2. Pediatric intensive care unit--a self contained specialty area for seriously ill children, ages one month to fourteen years, who require deliberate, planned, and highly skilled nursing and medical management.
3. Seriously ill child--a child experiencing an existing or potentially life threatening crisis. This term is used interchangeably with critically ill child or acutely ill child.
4. Design--a plan or representation of an idea by an outline or drawing; the tangible evidence of an idea. In this case a plan or representation for a pediatric intensive care unit based on ideas collected from nurses.
5. Nurse--a registered professional nurse in a staff level position working in a pediatric unit or an intensive care unit.

Scope of the Study

Any research undertaking must have certain parameters which guide the selection of method, sample, collection, and analysis of the data. The following statements represent the parameters of this study:

1. The study will fall into the category of descriptive research (Abdellah and Levine, 1965:518).
2. The informants for the study will consist of registered professional nurses who have experience in pediatric nursing and intensive care nursing.
3. The tool for data collection will consist of a preformulated list of questions.
4. Data will be collected by the interview technique.
5. The investigator will have the sole responsibility of analyzing and interpreting the data.

Significance of the Problem for Nursing

Descriptive studies are the most common type of research in areas related to nursing practice and patient care. The majority of these studies are non-experimental in design and serve to describe a wide variety of subjects: nurses as individuals, characteristics of patients, administrative patterns for patient care, and equipment and supplies which aid nursing care. Abdellah and Levine (1965:678) comment that studies dealing with the design of patient care facilities have been neglected in the field of

nursing research. This viewpoint gave additional impetus for conducting this investigation.

The nurse is the one person in the health care system who is most aware of the variety of services which are necessary for the therapeutic plan of the patient. Her contributions to the design of patient care facilities are based on knowledge and experience acquired through interaction with patients and family members. Interpretation of the attitudes, desires, and economic problems of patients is also a part of the planning process.

Planning facilities for patient care is, ideally, a collaborative effort between a number of individuals including nurses, physicians, and administrators. However, in planning new patient care areas, input from nurses is paramount since they are the members of the staff who remain on the patient care unit for extended periods of time. The design is important to the nurse because it affects her ability to function and provide care to the patients in her charge.

The nurses' involvement in the planning phase is crucial to the improvement of patient care whether it takes place in the hospital or the community.

CHAPTER II

REVIEW OF THE LITERATURE

A review of the literature for this study encompasses five areas: (1) history of the intensive care concept, (2) intensive care as an advanced system of nursing, (3) development of pediatric intensive care, (4) design of patient care areas, and (5) related reports and research studies.

History of the Intensive Care Concept

Intensive care nursing is "high level care for patients who require continuous, comprehensive, and detailed observation in an atmosphere of compassion and understanding" (Lambertson, 1968:3). The problem of the patient--medical, surgical, or traumatic in nature--must be presently or potentially life threatening (Meltzer, Abdellah, and Kitchell, 1969:xi).

The first special care area for neurosurgical patients was established at the Barnes Hospital in St. Louis in 1937. The facility consisted of six or seven beds in the male and female wards. "These beds were used for . . . acutely ill preoperative patients and for . . . post-operative patients who were moved to general wards as soon as they became convalescent" (Carini and Owens, 1970:3).

Nurses were specifically trained to perform certain tasks under the supervision of the doctor in charge.

Nurses realized that better patient care could be given with seriously ill patients grouped together; that is, more nurses could care for fewer patients. Previously one-to-one care was given to seriously ill patients; however, this procedure caused a variety of problems--utilization of too many nurses, decentralization over the entire hospital, and requiring duplication of equipment.

An article in Nursing Times states that,

> Changes in the traditional patterns of patient care were inevitable. The common problem of making the best use of skilled nursing care has resulted in the development of progressive patient care and in the establishment of the intensive care unit . . . initially, many of these units were for surgical patients . . . multibed wards were the most successful ("Tutors and Students in Intensive Care Units," 1965:1564).

In the late 1950's and early 1960's increased experimentation in cardiac surgery produced a type of patient whose care, by necessity, was placed under the supervision of a specially trained group of professionals, aided by electronic equipment. In the early days, the patient care area was a section of an already existing recovery room, close to the surgical suites and medical personnel. Today, intensive care units are separate, self contained, and highly sophisticated patient care areas.

The inception of coronary care units dates to 1962; one of the first was established at Presbyterian Hospital

in Philadelphia under the auspices of a United States Public Health Service Grant (Meltzer, Pinneo, and Kitchell, 1965:i). The establishment of such units was the direct result of intense studies of the physiologic changes occurring in myocardial infarction, indicating that certain signs are easily recognized and treated. On many occasions, death has been avoided in a single patient more than once.

Variants of the concept of intensive care developed rapidly. Intensive care units now exist for the exclusive management of coronary artery disease, severe medical problems, surgery and trauma, cardiac surgery, and pediatrics. "The purpose of the intensive care unit is life saving. Patients are sent here only if it is anticipated that concentrated medical and nursing care will restore them to health" (Barrett, 1968:40).

Intensive Care as an Advanced System of Nursing

The intensive care unit is not only a special environment for the patient but for the nurse as well. The nurses deal constantly with the critically ill and experience emotional turmoil because they deal with death of patients frequently (Strauss, 1968:9).

The traditional role of the nurse must be transcended in the intensive care system. The areas of responsibility are not always clear, especially in

emergency situations. At times, the nurse will be called upon to make and deliver decisions that would, under most circumstances, be left to the physician (Meltzer et al., 1965:i; Burrell and Burrell, 1969:4).

The nursing functions in any intensive care unit are highly developed. "Intensive . . . care is essentially an advanced system of nursing. It is not an advanced system of medical practice based on electronics" (Meltzer et al., 1965:i). The focus of intensive care nursing is very narrow and very intense. The nurse usually works with one to three patients, continuously monitoring vital processes. A survival crisis makes the focus much more intense for the nurse (Strauss, 1968:9). Intensive nursing care and routine nursing care differ in that "the former not only involves what the nurse does for a patient but also includes what she sees, hears, and feels. Early recognition of subtle changes thwarts potential difficulty" (Burrell and Burrell, 1969:3).

Development of Pediatric Intensive Care

To imagine a time when pediatrics or pediatric nursing did not exist is difficult; however, these specialties evolved in the last one hundred years (Blake and Wright, 1963; Faber and McIntosh, 1966). "Recognition of the need for special instruction for nurses in the care

of children roughly parallels the development of separate units for the care of children" (Blake and Wright, 1963:3).

Pediatric intensive care units developed as separate entities because they focus on a clearly defined segment of the population. According to Nelson (1964:8), "no field of specialized medicine has a broader scope, greater responsibilities or greater possibilities than pediatrics. One important aspect sets it apart from other divisions of medicine: it is concerned with the continued growth and development of its subjects."

Pediatric intensive care is not new. As long as twenty to thirty years ago, pediatric wards in general hospitals had areas which were specifically designated for the care of very ill children; these children were "specialed." Angle and Glyn (1969:737) writing in the Nebraska State Medical Journal describe it thusly, "high intensity care units for children were first centered on respiratory problems in poliomyelitis centers of 20 years ago and before that in the old croup centers."

Intensive care units for children, as an integral part of the pediatric service in a general hospital, are recent developments (May, 1972:76). All too frequently, the pediatric intensive care unit is simply created from an existing space. Virtually little or no consideration is given to the people who will staff these units, namely, the nurses (Strauss, 1968:8). Frequently, they are not

consulted for any ideas or information which would aid in the design of a new unit.

A seriously ill child should be treated as a child; he should not be expected to exhibit characteristics Western society often associates with adults such as displaying stoicism, avoiding expressions of pain, or holding back tearful episodes. Adults often expect too much of a child in a stressful situation; a serious illness in a child represents a situation which is stressful in a physical and emotional sense.

White (1970:877), a pediatric surgeon states, "The child making the transition from the newborn period to adulthood cannot and must not be considered merely a little adult." Marlow (1965:29) continues, "the differences in illness in children and adults are based on the anatomic, physiologic, and psychologic differences between the immature child and mature adult."

Children requiring intensive care have been admitted to adult intensive care units. In one study it was found that nurses on the pediatric unit did not wish to have the children transferred from the unit. "These children presented a challenge to the staff which should not be lightly delegated elsewhere" (Harper and Varakis, 1970: 812). This same study indicated that the nurses in adult intensive care units found children to be a novelty but they did not easily fit into the routine. The environment

of an adult intensive care unit was considered "basically unsuitable for children" (Harper and Varakis, 1970:812).

In another study, also concerned with children in adult intensive care units, the doctors stated, "A trend towards the management of children in adult intensive care units run by nurses who have not had . . . training in pediatric nursing is retrogressive. Pediatric skills and expertise, both nursing and medical, are already available in the children's ward, part of which can be easily set aside for the critically ill . . . child" (Appleyard and Joseph, 1970:425). A good pediatric intensive care unit serves two meeds: it offers high quality nursing care and is a method of providing considerable psychologic support (May, 1972:82).

Design of Patient Care Areas

A design is an expression of the requirements for a new unit. "Design of the physical space and design of methods of operation are two sides of the same coin" (Lindheim, 1966:1670). The architect must consult those who work in the situation for the practical decisions, which are based on experience, common sense, and occasionally, intuition (Souder et al., 1964:31). As is often the case, the person who knows the most about health care facilities and how they enhance or hinder the delivery of patient care is ignored when such facilities are in the

planning phase (Wylie, 1969:42). Nurses involved in the planning process may help to "humanize" the hospital environment in an effort to better meet the needs of patients (Pitel, 1969:68). Success in the areas of planning and design depends on the melding of many conflicting ideas.

Hospitals as a whole and in their individual components, are considered difficult to plan and design. "It is in many ways a microcosm of the larger social context of which it is a part. It reflects within its own organization many of the larger unsolved complexities of . . . life as a whole (Lindheim, 1966:1669).

The most important questions to be asked when involved in hospital planning are "what population will be served; what is the nature of the service to be offered; what form will the organization take; what are the necessary physical requirements; and what is the projected future of the service" (Lindheim, 1966:1670). These questions may be applied to any unit in the hospital framework and specifically to the planning and designing phases of a new pediatric intensive care unit for the pediatric service in a general hospital.

"A general hospital is an expression of our social feelings about birth and death, health and sickness, the value of human life, and our own opinion about pain" (Osmond, 1966:98). Many times these considerations are not

examined in depth, if at all. Osmond (1966:100) states again, "Harm . . . can be done by unnecessary anguish. This may be caused by the design of the physical environment, by separation of a mother and child, by leaving a sick person alone for hours on end, or by not allowing someone to die with dignity and calm in the presence of friends."

Kasin (1966:106) feels that nurses need to be freed from such chores as manipulating the temperature, opening or closing windows, or constantly adding or taking away blankets. Bailey (1966:101) contends that patient and staff representation are most notably lacking in terms of "decisions concerning color, materials, textures, light and all the other factors which together result in the creation of the visual physical environment . . . ."

A "round-table" discussion of the logic of hospital design presented a variety of opinions on this subject. One of the participants, a psychiatrist, maintained that "if the main phase or main feature of the design is to help get the acute patient restored . . . you design your building not in terms of what is best for the patient but in terms of the staff which has to provide care ("What Should be the Logic of the Way We Plan Our Hospitals for the People," 1966:115). Another participant, an architect, stated that ". . . it may be at least as important to the patient to have the appropriate

environment at the critical stage as it is in the convalescent stage. . . . An acute patient . . . just coming out of surgery . . . wakes up and sees vague shapes on the other side of the curtain . . . would this not create some anxiety in this patient's mind at this stage?" (pp. 116-117).

For children, Dimock (1960:83) advocates bright walls, colorful sheets, pictures, and perhaps a favorite toy from home to aid in adjustment to hospitalization.

Related Reports and Research Studies

The literature reveals hundreds of articles and reports of various studies that have hospital planning and design as the primary focus.

The Modern Hospital devoted its March, 1966 issue to planning the hospital environment. The variety of articles reflected hospital function, human needs, climatic controls, esthetics, and the logic of design. The authors were primarily architects, engineers, hospital administrators, and sociologists. The only article of this series which contained a nursing viewpoint was entitled "What Should be the Logic of the Way We Plan Our Hospitals for the People" (1966); its format was a round table discussion.

Clibbon and Sachs (1969) working at the Architectural Research Unit of the University of Pennsylvania

School of Medicine, attempted to develop hypotheses which would bring hospital planning into the scientific realm. References were made to the effect of progressive patient care on hospital design. No specific mention was made of the position of nurses in the hospital. A methodological approach for research in hospital design was not formulated by these authors.

Stewart (1972) reports on his QUEST approach to design. QUEST is an abbreviation for a five part process which includes questioning, understanding, estimating, selecting, and teamwork. Stewart, an architect, used this approach to direct an interdisciplinary team to provide an appropriate design for an addition to a community hospital. Participants were the hospital administrator, the plant engineer, the executive building committee, a hospital consulting firm, the architect, the contractor, and a cost accountant. There was no representation from the medical or nursing staffs nor from any other clinical facility; however, patients, visitors, and staff provided the team members with some of the information.

Lindheim (1966) writing in the American Journal of Public Health, discusses a variety of factors which influence hospital design. Specifically, she studied the organization of three diagnostic radiology departments in different hospitals. This department was selected because it provided "in capsule form many of the problems

encountered in the design of other hospital departments" (Lindheim, 1966:1672). She examined the radiology departments in terms of uncoupling systems. According to Lindheim, no design can be right or wrong but it depends on the size of the specific department and its relationship to other aspects of the hospital. Lindheim concluded her report with generalizations directed toward other hospital services.

Three recent articles focus on selected aspects of pediatric intensive care. Harper and Varakis (1970) discuss the results of an investigation which they conducted to ascertain the attitudes of parents, staff, and children to intensive care facilities. Parents and their children were interviewed by the investigators after the termination of the hospital episode. Parents were reported as generally favorable toward the utilization of the intensive care facility for their child. Harper and Varakis reported that the children had no pertinent comments and had difficulty remembering their experience in the intensive care unit. According to the investigators, the nursing staff on the pediatric unit favored the retention of the seriously ill children on the unit rather than transferring them to the intensive care unit.

Barbara and DiDonato (1971) discuss the development of a pediatric intensive care unit from the physician's point of view. These doctors stated that the pediatric

intensive care unit should be under the direction of the department of anesthesiology. Their description of the equipment was based primarily on respiratory problems of children. These authors placed nurses in a secondary role and made no mention that nurses were consulted when the unit was planned.

May (1972) reports on a psychiatric study of a pediatric intensive care unit. His commentary is based on observation and interviews with children, parents, and nursing staff. The primary focus is interpersonal relationships and adjustments to a pediatric intensive care unit.

Bobrow and Perry (1968) are architects who have participated in many hospital projects. Their discussion of nursing was limited to the inadequacies of special duty nursing which eventually led to the development of intensive care units. However, their report does not indicate how they obtained input for three intensive units which they designed.

Fitzwater (1967), an intensive care supervisor, relates the nature of equipment and structural materials utilized in a surgical intensive care unit in her article. She provides no information on who made the decisions in the planning phase of the unit or how the decisions were made.

Two separate articles by Eckoff (1967) and Chapman (1967) discuss problems of designing operating and recovery rooms. Eckoff outlined some considerations for patient care, personnel, and the relationship of the operating room to other hospital facilities. However, she failed to elucidate how she obtained her information and who made the ultimate decisions regarding the design of the operating room. Chapman referred to traffic patterns in the recovery room and specific equipment such as an intercommunication system, lighting, and large clocks.

Gross (1972) in her Master of Science Thesis identified equipment and facilities used in the emergency treatment of drug abuse patients. Her method of data collection was participant-observation. She did not mention design of new facilities.

Trites et al. (1969) reported on one experimental study which tested alternative designs of nursing units. The hospital at which the study took place was developed as a laboratory to examine the components of hospital organization. The authors collected data from physicians, patients, registered nurses, practical nurses, and aides. Nearly two million pieces of data were collected and analyzed. Results of the investigation indicated that a large percentage of the informants in each group preferred the radial type unit to the corridor type unit. The implications of this study may be applicable to other

institutions which are planning changes or creating new patient care areas.

Pitel (1969) and Wylie (1969) discussed hospital design from a nursing point of view. Pitel, a nurse educator, noted that hospital design should focus on the needs of the patients. Wylie, as a director of nursing, asserted her influence on the design of a university health sciences center.

A review of Nursing Research from 1966 through August, 1972 revealed no applicable studies by nurses which focused on planning and designing patient care facilities.

From the variety of studies and reports reviewed one fact became obvious. Nurses in staff level positions were not often considered for participation in planning new patient care units. The majority of articles were not authored by nurses.

This investigation differs from those which were reviewed because it focuses strictly on the planning of a specific patient care unit and the information about the special problems and considerations for this unit are obtained from nurses who work directly with patients.

Summary

Planning and designing any new unit within the hospital calls for the interaction of all those involved with patient care and collaboration with experts in other

fields. Ideas for the new unit should, ideally, reflect and answer the following questions: What has previously occurred during the development of the desired unit? What type of unit is needed? What type of patient will use the unit? Who will staff the unit? How will the unit be utilized? What form will it take? These questions form the basis for studies of patient care facilities.

CHAPTER III

RESEARCH METHODOLOGY

This chapter discusses the ethnographic method of data collection, development of the questionnaire, selection of the sample, description of the setting, and collection of the data.

Ethnographic Method of Data Collection

The data for this research were collected by the ethnographic method. The basic goal of such an approach is to grasp a vision of the world as seen by the people who experience it. This view, then, is different from that with which the investigator is familiar (Malinowski, 1953: 25). Necessary conditions for ethnographic work include close contact with the group under study and a strong background in theory and scientific study. Experience and theory limits or decreases the possibility of preconceived ideas within the mind of the investigator, but allows him to draw formal conclusions about what is under study.

The ethnographer must not look at one isolated aspect of the group but must view it in relation to the entire setting (Malinowski, 1953:11). In order to preserve the data with its original meanings intact, it should be

collected in the verbatim context (Malinowski, 1953; Pelto, 1970).

Development of the Questionnaire

An open-ended questionnaire was developed for intended use with registered professional nurses who currently work or who previously worked in pediatric units and intensive care units. The purpose of the questionnaire was to elicit a variety of information regarding the care of seriously ill children.

The schedule of questions included such items as (1) what concerns do nurses have when they care for seriously ill children? (2) to whom are these concerns directed? (3) what do nurses believe would help them give better care to these children? and (4) how might these needs be translated into a design and/or guidelines for a pediatric intensive care unit?

These questions were divided into two general areas: (1) profile information on the nurses and the institutions and (2) information regarding the care of seriously ill children. The specific questionnaire utilized is presented in Appendix B.

The questionnaire was given to three nurses before data collection began in order to clarify the questions and the information which was requested. Only minor adjustments were made.

Selection of the Sample

A convenience sample was used in the study. The intent was to collect information from registered nurses who were familiar with the pediatric intensive care setting. Each expression of concern was treated as a legitimate datum. The number of times an "expression of concern" was elicited from a single nurse or group of nurses was not important for this study.

This investigator made personal contact with the head nurse or supervisor of the pediatric unit in each hospital prior to setting up an interview schedule with staff members. The nurses in the intensive care units and those nurses not working were approached on an individual basis. Several attempts to obtain interviews with nurses on the evening shifts proved unsuccessful.

Although the number of nurses for the sample was not specified at the outset of the investigation, thirty-six registered professional nurses were interviewed.

That all the nurses in the sample were female was not intentional; however, no male nurses were available at the time the investigation was conducted.

Since the study was directed at the facilities for care of seriously ill children, nurses with experience in pediatrics and intensive care were sought for their viewpoints.

Problems related to the management of patient care develop during the entire 24 hour period. Although all nurses were interviewed during the "day" shift, most of the nurses rotated shifts during their current assignment.

Description of the Setting

The study took place in a large southwestern city of 350,000 which has nine general hospitals. Six of the nine hospitals were selected because they had ten or more beds devoted to pediatrics. Three hospitals, not selected, were eliminated on the following criteria: two had no pediatric service; the third hospital had less than 10 beds devoted to its pediatric service. The hospital affiliations are as follows: one is military, one is a university medical center, two are secular, and two are private corporations, although all are considered community hospitals.

Table 1 gives the relationship of total beds and the number of beds for pediatrics, pediatric intensive care, and adult intensive care. The order in which the hospitals are listed does not reflect the above classification.

The number of pediatric beds represents 8.6 percent of the 1551 beds available in the six selected hospitals. The projected maximum number of pediatric intensive care beds is 13 or 9.8 percent of the 134 pediatric beds

Table 1. Relationship of Pediatric Beds and Intensive Care Beds in Six Selected General Hospitals

Hospital	Total Beds	Pediatric Beds	Pediatric Intensive Care	Intensive Care
A	100	14	0	4
B	558	52	5(projected)	25
C	100	22 including	4	21
D	250	28	2-4	6
E	305	10	0	8
F	238	28	0	7
Totals	1551	134	11-13	71

available. Adult intensive care beds, numbering 71, constitute 4.5 percent of the 1551 beds available in the six hospitals.

Hospital C had the only functioning pediatric intensive care unit at the time the investigation was conducted. Hospital B was developing a pediatric intensive care unit at the time, to be operational by August, 1972. Hospital D had two semi-private rooms located directly adjacent to and directly across from the nurses' station which were specifically designated for the care of critically ill children. The remaining hospitals used any room or moved the child closer to the nurses'

station for observation. No other specific designation was made. Hospital A did not use its intensive care facility for children under any circumstance; Hospital C with its own pediatric intensive care unit did not utilize the adult intensive care unit for children; all other hospitals do have children as patients in the adult intensive care units at varying times.

Each of the six pediatric services has a protocol for the seriously ill child requiring hospitalization. The following is summarized from what the nurse researcher was told by the nurses who participated in the study.

Hospital A

Any child who is burned is kept on the pediatric unit. Also any child who needs to be isolated is kept as a patient. All other seriously ill patients, especially trauma cases go to Hospital B.

Hospital B

Until the pediatric intensive care unit is completed all the seriously ill children go to the regular adult intensive care unit. If the child requires isolation he is "specialed" by the ward staff.

Hospital C

Only children who can benefit from the pediatric intensive care unit are admitted there. The children who

are terminal are cared for on the unit. Isolation requires a one-to-one situation.

Hospital D

The children who are seriously ill do not go to the adult intensive care unit. The doctors feel that specialing the child on the pediatric unit is a much better arrangement than transferring them to another unit. When the seriously ill child remains on the pediatric unit, a private nurse is provided and intensive care rates are charged.

Hospital E

There is no pediatrician on the medical staff so the child receives care from a specialist. If necessary, the child is "specialed" on the pediatric unit or sent to the intensive care unit. If the child has a serious surgical problem he is sent to Hospital B.

Hospital F

The seriously ill child is "specialed" by a member of the pediatric nursing staff rather than sent to the adult intensive care unit.

Collection of the Data

Only registered professional nurses were interviewed. The number of nurses in the sample was thirty-six. The data were collected over a 10 week period of time

during February, March, and April, 1972 in six selected general hospitals with a Pediatric Service.

Since an appointment to interview the nurses had been established in advance, the investigator met the interviewees at the hospital at the designated time.

Prior to conducting the interviews, a brief introduction was given to the nurse stating the scope, purpose, and methodology of the study. Details are presented in Appendix A.

The nurse researcher asked the questions from a preformulated list. All comments were recorded verbatim by the researcher during the interviews. The specific questions utilized during the interviews are shown in Appendix B.

The data were collected in an individual interview from 26 of the 36 nurses. Each interview required approximately 30 to 45 minutes and was conducted in the patient care area. When interviewing the nurses at Hospital B, 10 nurses were available at the scheduled time; in this case, the nurses were arbitrarily divided into two groups of 7 and 3 by their supervisor. These interviews were conducted in a conference room immediately adjacent to the pediatric unit. These interviews required 35 minutes and 20 minutes respectively.

Summary

The ethnographic approach was utilized to obtain data for a descriptive study of nurses' viewpoints for the design of a pediatric intensive care unit. An open-ended questionnaire for use with a registered nurse sample was developed by the investigator. Thirty-six registered professional nurses constituted the sample. All data were collected in the verbatim context from individual or group interviews.

Several different types of information were sought from the nurses. The common objective focused on eliciting nursing viewpoints which could be subsequently translated into guidelines for a pediatric intensive care unit. The questions delved into the care of seriously ill children, the role of parents, and suggestions for the physical environment of an intensive care unit for children.

Six general hospitals with a pediatric service of more than 10 beds were selected as the settings for the study.

CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

This chapter presents a profile of the subjects, categorization of the data, analysis of the data, and findings of the study.

Profile of the Subjects

Thirty-six registered professional nurses constituted the informants for this investigation. Thirty-three nurses worked in six different general hospitals at the time the interviews were conducted; the remaining three nurses were not actively employed but were engaged in related nursing activities. This information is reflected in Table 2.

One-third of all the nurses interviewed were staff members at Hospital A. The investigator was utilizing the clinical facilities at Hospital A for a clinical nursing practicum and was thus able to contact more nurses over an extended period of time.

Twenty-seven of the thirty-six nurses (75%) were actively employed in pediatric units at the time the investigation was conducted. Six nurses were members of intensive care unit staffs when questioned. The remaining three nurses, though not actively employed, participated

Table 2. Number of Professional Nurses Interviewed by This Investigator at Six Selected Hospitals

Hospital	Number of Nurses	Percent
A	12	33.33
B	10	27.78
C	4	11.11
D	2	5.56
E	2	5.56
F	3	8.33
Other	3	8.33
Total	36	100.00

in a variety of nursing related activities. Table 3 reflects the clinical status of the nurses at the time the investigation was conducted.

Immediate past experience (not more than one year prior to the interview) of the nurses was recorded. Twenty-three nurses had previous experience in either pediatric units (10) or intensive care units (13). Three nurses reported that their previous nursing activities had been in the emergency room or the recovery room. Eight nurses transferred to pediatric nursing from medical and surgical nursing activities. The remaining two nurses were

Table 3. Area of Clinical Practice for the Professional Nurse Sample at the Time the Interviews were Conducted

Area	Number	Percent
Pediatrics/PICU	27	75.00
Intensive Care	6	16.67
Other	3	8.33
Total	36	100.00

previously employed in public health and child psychiatry. Table 4 reiterates the above information.

Fourteen of the nurses listed preparation in pediatrics, intensive care units, or specialty areas as essential for employment in a pediatric intensive care unit. The remaining twenty-two nurses expressed no opinion regarding the professional preparation of the nurse who would work in a pediatric intensive care unit, but merely stated that such a desire depended on the individual nurse concerned.

In summation, the thirty-six nurses had a variety of clinical experiences which helped form their answers during the interviews.

Table 4. Immediate Past Experience of the Professional Nurse Sample at the Time the Interviews were Conducted

Clinical Area	Number	Percent
Pediatrics Only	10	27.78
Intensive Care or Coronary Care	13	36.11
Emergency or Recovery	3	8.33
Medical and Surgical	8	22.22
Other	2	5.56
Total	36	100.00

Categorization of the Data

The raw data included 250 separate responses. Categorization of the data followed this procedure: each response was placed on an index card so the data could be sorted. The following categories emerged from the data: patient care, equipment and supplies, policies, attitudes, and environment-space and esthetics. Further analysis indicated that these categories were directed toward three distinct groups of people: the nurses, the seriously ill children, and the parents. Once the categories and directions were established, it then became necessary to

view the data as a whole and to grasp the various interrelationships existing in the data. To accomplish this task, the investigator developed a three dimensional model which is illustrated in Figure 2.

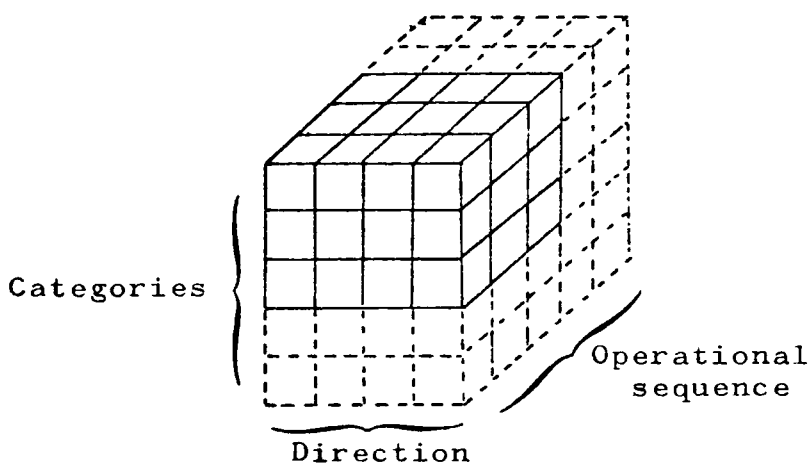


Figure 2. Investigator's Three Dimensional Model

The broken lines indicate that the model can be expanded ad infinitum to accommodate increased data, including different categories and directions.

This illustration is based on Guilford's (1967:60-64) representation of the structure of the intellect theory. Guilford's model reflects increasing dependency relationships among the components as depicted in Figure 3.

The investigator's representation differs from Guilford's model for this reason: categories, directions, and outcomes, although interrelated do not reflect dependency on the previous or following component. Items can be added or deleted without destruction of the original intent. Use of the three dimensional model is shown in detail in the next section, Analysis of the Data.

Analysis of the Data

A chart was made utilizing the categories of concern and the directions of concern as parameters for examining the data. A skeleton example of the chart is shown in Figure 4.

Then, each item of concern listed within the squares (reading across the row) was scrutinized for potential design criteria or guidelines for use in developing a pediatric intensive care unit. Figure 5 serves to illustrate how the investigator accomplished the

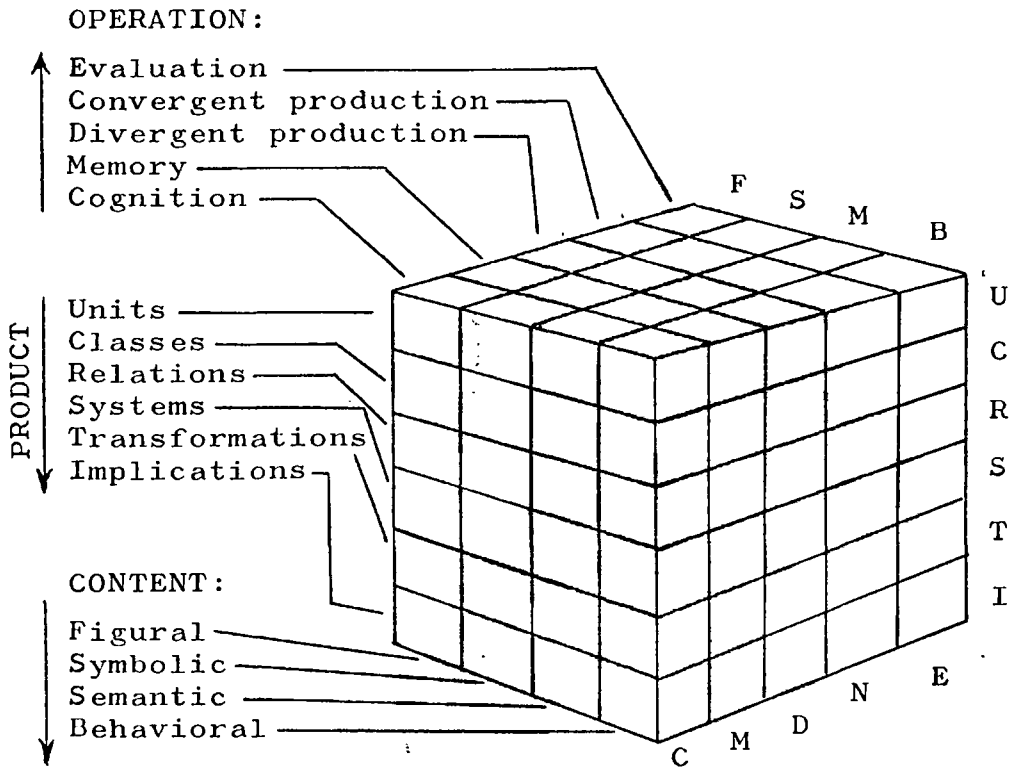


Figure 3. Structure of the Intellect Model with Three Parameters (Guilford, 1967:63) -- Arrows, added by this author, indicate the direction of increasing dependency on the previous component.

Nurse is Concerned / Major Category	For NURSES as a group	For seriously ill CHILDREN	For PARENTS of the seriously ill children
Patient Care	I'm not sure I'll know what to do	Rapid changes in the child's condition	Allow to assist with some care
Equipment		Have pediatric size equipment	
Policies			Visiting important
Attitudes			
Environment (space and esthetics)	Good visibility from any point		

Figure 4. Chart for Presentation and Analysis of the Data with Two Parameters

Category: Patient Care

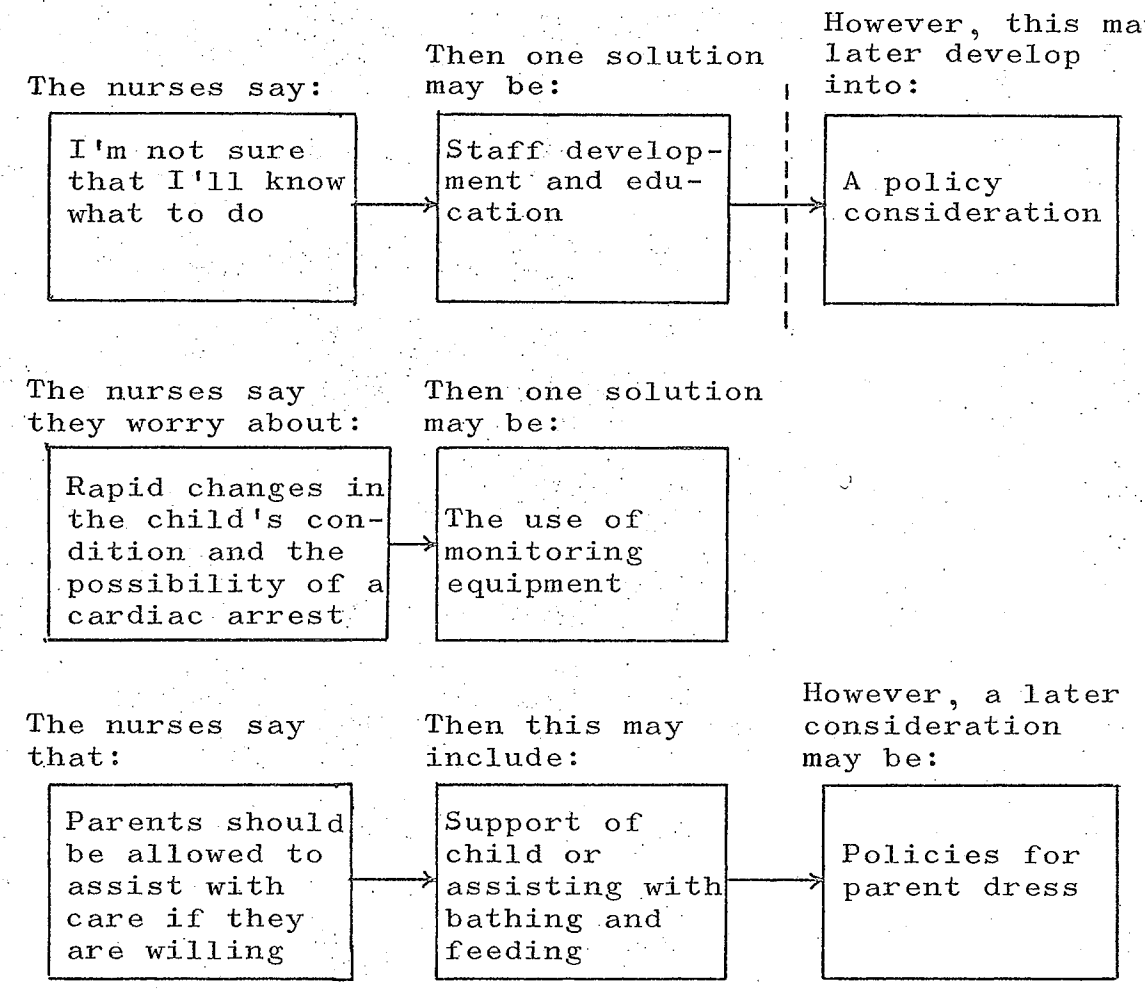


Figure 5. Schematic Representation of the Process of Analyzing the Data

task of analysis of the data. The first row of the chart is explained in detail.

This process was followed until analysis of all the data was complete. Every concern of the nurse was not directly translatable into a tangible outcome. The reverse logic indicates that one design criteria or potential guideline may alleviate more than one problem or create new problems which must be solved.

Figure 6 illustrates how the investigator developed the component parts of the three dimensional model. Examples of responses of 36 nurses obtained during interviews are listed in Appendix C.

Findings

Discussion of the findings is based on three parameters of the model: categories, direction, and operational sequence. The responses of the nurses ranged from general to specific in any given category. This was particularly true in the areas where the concerns of the nurses were directed toward themselves. Figure 7 illustrates how the investigator incorporated the data into the three dimensional model. The three dimensional model allows a general overview of the data as a whole and can be enlarged to accommodate additional findings. Utilization of all cells for data would probably not occur at any given time.

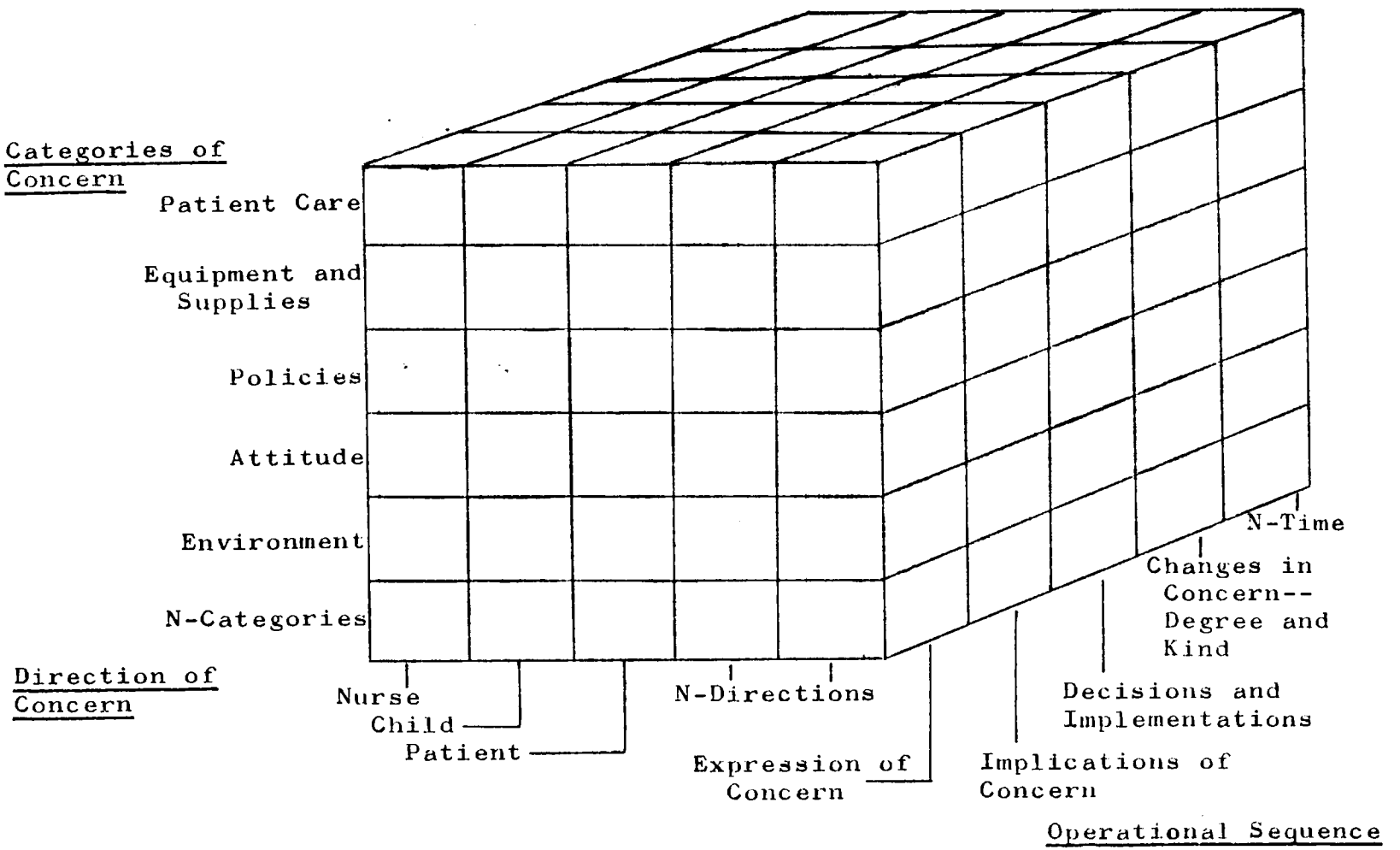
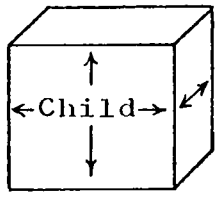


Figure 6. Three Dimensional Model

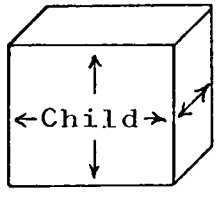
Patient Care



Expression of Nurses' Concern

Example: Rapid change in child's condition

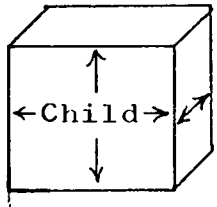
Patient Care



Implication of Nurses' Concern

Example: Possibility of cardiac and/or respiratory arrest

Patient Care



Decisions and Implementations

Example: Use of monitoring equipment (portable or built-in)

Figure 7. Three Dimensional Model with Parameters Indicating Placement of Data

The broad categories--patient care, equipment and supplies, attitudes, policies, and environment constitute the basic outline of the text.

Patient Care

Approximately one-third of the 250 responses obtained during the interviews related to patient care. The primary focus of these responses centered on the nurses' disquietude in providing care to the seriously ill child. The child as recipient of care and the role of the parent in providing care was secondary.

Nurse. Self directed concerns included skills, knowledge, and the availability of medical attention. Five of the intensive care nurses felt that they did not have "enough skill in handling children" and that their "knowledge of pediatrics was limited." Eight nurses working in pediatrics admitted that moderately ill children did not bother them but they were "scared by critically ill children." The former medical-surgical nurses stated that the care of seriously ill children is "much different than caring for adults" and "it's hard to shift gears." This group of nurses doubted their ability to "recognize important changes in the child." One nurse questioned her right "to make life and death decisions."

The availability of medical attention was mentioned by five nurses as a problem which caused them concern,

especially "getting medical attention fast enough" and often times the "availability of a pediatrician."

Child. The primary concern of the nurses for seriously ill children was directed toward "rapid changes in condition" or "deterioration of vital signs." Five nurses mentioned the possibility of the child suffering from a cardiac or respiratory arrest as their greatest concern. Other problems encountered with seriously ill children included intravenous therapy and convulsive disorders.

Parent. Nearly one-half of the nurses interviewed were negative in their view of parents and parent participation in the care of the child. Such responses included "they are always in the way," or "I can't stand it when a mother is peering over my shoulder," or "everyone knows that you can care for the child better when the parents are not around." These types of responses were prevalent from nurses in certain hospitals. Seven nurses felt that the parents should determine their own role but mainly "just be available." The remaining twelve nurses were overwhelmingly in favor of parents assisting with the care of their seriously ill child especially in bathing or feeding activities, and supporting the child during certain procedures.

Equipment and Supplies

Concerns about equipment were directed toward the nurses, the child, and the parent. The nurses were most vocal about their own needs.

Nurses. Six of the nurses commented that often "supplies and equipment are not available when necessary" or that if they are available, a particular item "may not be in working condition when needed."

"Best available equipment" was cited by six nurses as an important consideration in this area. Also mentioned was "a variety of resuscitation and emergency equipment" as essential. Several of the nurses felt that quick access to all equipment and supplies was most desirable. Seven nurses commented on ways of obtaining this accessibility such as "trays and carts set up with all the equipment" or "everything as mobile as possible."

Each nurse had definite ideas regarding the specific equipment that should be made available when planning a new pediatric intensive care unit. Some of the items mentioned included wall mounted and portable monitors, built-in blood pressure apparatus and opthalmoscopes, wall oxygen and suction, individual lighting, and sinks by every bed.

Child. "We never have the right size tracheostomy sets for children; they are either too big or too small,"

commented several of the nurses. The nurses were also concerned about medications for the child. "The emergency cart should be set up with medications in pediatric dosages. It's too easy to make a mistake."

Parents. The nurses voiced two concerns about parents sometimes assisting with the care of their seriously ill child. "The parents sometimes get upset or frightened when they see so much equipment used around their child." "If we are going to let the parent help with some aspects of care, every item they need should be available in the patient area."

Policies

Staffing policies and practices were the topics of concern to the nurses. They also offered their suggestions about the type of child who would or would not be a candidate for the pediatric intensive care unit. Concern for the parents permeated this discussion as well.

Nurses. The nurses felt that the pediatric intensive care unit should have a "high nurse-patient ratio." One nurse delineated this to mean "at least two registered nurses per five children." Several of the nurses felt that the pediatric intensive care unit should be staffed separately from the regular pediatric unit. The qualities of a pediatric intensive care nurse were

described as follows: they should be "educated in physical and emotional care of children"; they must "really be child oriented"; they should "be skilled in the care of seriously ill children"; and they should "be knowledgeable in the utilization of resuscitation techniques."

Child. The type of patient best served by a pediatric intensive care unit was characterized by the nurses. Ideally, pediatric patients with traumatic conditions, open heart surgery, renal disease, neurological problems, and respiratory distress would be candidates for the pediatric intensive care unit. Several nurses mentioned that the nature of the illness was less important than "the nursing needs of the child." Terminally ill children, the nurses felt, should be excluded from the pediatric intensive care unit as "they did not need the stimulation" and could be "better cared for by a special nurse."

Except for two nurses all felt that, ideally, a seriously ill child should be cared for on the pediatric unit in preference to sending the child to the adult intensive care unit. All of the nurses agreed that pediatrics and pediatric intensive care are specialty areas as are the other clinical services within the hospital.

Parents. The primary concern for the parents was directed toward their availability to the child at any time. Nineteen nurses favored unlimited or extended visiting hours. During the critical phase, the child's only visitors should be his parents. Although the nurses favored parental assistance to some extent, they felt that the parents should not watch painful or complex procedures performed on their child because "some of them can't take it." The remaining seventeen nurses said that the limitation of visiting hours should be their prerogative. These were the same nurses who had negative views toward parents.

Attitudes

Certain feelings, moods, or conditions permeated the discussions regarding the care of seriously ill children. Nurses' attitudes were channeled in two directions--ability to cope emotionally with a seriously ill child and ability to provide care to the child. These attitudes were also reflected when the nurses were questioned about the parent.

Nurses. "Playing God bothers me" was the response of one nurse. In this same line another nurse commented that she "hoped her religious beliefs would not interfere" with her ability to function. Several nurses stated they became "upset when a child died."

When asked if they would work in a pediatric intensive care unit twelve of the thirty-six nurses replied with an unequivocal "yes." Approximately one-half or seventeen replied negatively to the same question. The remaining seven nurses said that they would work in a pediatric intensive care unit on occasion.

Child. "Nurses often expect too much cooperation from a seriously ill child," commented eight nurses. "You become frustrated in your ability to function with the seriously ill child" was the reply of several nurses. That children often "saw and heard more than they let on" was given support by a large number of the nurses. They felt that children needed to be protected from dying and exposed adults. Except in two cases, all the nurses agreed that "children just do not belong with adults [in the same patient care areas] in periods of illness."

Parents. Ten of the nurses expressed concern over parents who get upset easily or those who display extreme apprehension during the child's acute illness. All of the nurses agreed that parents need "someone to talk to" and they "need to know what is going on with the child." A trio of nurses said they tried to be available for the parents; several nurses admitted that they did not like to talk to parents. The remaining group of nurses would

assist parents if asked but would not, themselves, take the initiative in such situations.

Environment

The nurses appeared generally enthusiastic about giving their ideas regarding what a pediatric intensive care unit should look like and what should be included in such a unit. A few nurses volunteered that they had been interested in this area and had read some articles pertaining to planning new patient units. The nurses talked about what they thought was necessary to provide care, what was important for a seriously ill child, and what parents needed in terms of esthetics and arrangement of the physical space.

Nurses. According to the nurses, the ideal pediatric intensive care unit should be circular in shape with the nurses' station in the center so all patients could be seen and heard without difficulty. The area should be large and flexible. The pediatric intensive care unit should be able to accommodate a minimum of five patients. All rooms should be private, self-contained cubicles with partial glass partitions, windows to the outside, good ventilation, individual lighting, soundproofing, and air conditioning. The doorways should be wide; storage space built into the rooms; at least a sink in every room but more desirable would be a total bedside

console. A large storage area for equipment and supplies was thought to be essential. The nurses asked for clocks and sufficient electrical outlets. A separate isolation area and medication area was deemed necessary and perhaps, a small laboratory area for doing immediate blood studies and urinary determinations. Because tension arises in a pediatric intensive care situation, the nurses decided that a quiet room or lounge area for themselves was essential to their own emotional well being.

Child. For the children, "make it look like pediatrics" by using bright, cheerful, and varied color schemes; wall decorations, posters, murals, and mobiles; a favorite soft cuddly toy from home; and television and music for stimulative purposes even if the child is unconscious. The nurses felt that children were definitely aware of their environment no matter how ill they may be.

Parents. Since parents would inevitably be near their child no matter what the attitude of the nurse, it was felt that a special parent lounge was essential--a quiet area for conference, waiting, or sleeping if necessary.

The foregoing discussion reveals numerous interrelationships, harmonious and conflicting, between people and ideas. In some cases, it is difficult to separate the two distinctly. This information, it must be remembered,

reflects a collective viewpoint of one small group of health professionals.

Summary

A large volume of raw data was collected in 36 interviews. Each nurse often made several comments in response to the questions. Over 250 responses needed to be categorized and reduced to a manageable level. After obtaining categories, the data were analyzed according to the nurse's concern for the nurse, the child, and the parent. Each generalization was then examined for criteria to utilize in the design of a pediatric intensive care unit.

Nurses possess knowledge which can be applied to planning for patient care areas. The data support the theory that persons who are involved at the direct operational level of an organization are aware of a variety of special needs and problems which only their input can help to alleviate.

CHAPTER V

INTERPRETATION OF THE FINDINGS

The major divisions of this chapter include informants in the planning role and proposed guidelines for a pediatric intensive care unit. The chapter concludes with restrictions of this study and recommendations for further study.

Informants in the Planning Role

Nurses assigned to the clinical area in staff level positions can be significant contributors to hospital planning. Being the most knowledgeable about daily activities, patient care requirements, and the overall functioning of the nursing unit, they can interpret these ideas to other members of a planning team. Nurses do have valuable ideas; they should be involved when changes are to take place.

Informants for this study were a group of thirty-six registered professional nurses. They may be considered, in Likert's view, a small group of experts capable of decision making at their level in the organization. On the other hand, they may also be considered, in Souder's estimation, the technical level of the hospital organization, capable of providing necessary

information but having no power to render a decision. In this study, the informants served a dual purpose. Firstly, they are utilized to provide the information (Souder); secondly, they are cast as the small group of experts (Likert) who can assist in making the decisions (the guidelines) for a pediatric intensive care unit.

Proposed Guidelines for a Pediatric Intensive Care Unit

One of the purposes of this investigation was to establish a series of guidelines for planning and developing a pediatric intensive care unit for a pediatric service of a general hospital. The proposed guidelines represent a part of the third step in the planning process, that of recommending changes for consideration. To proceed beyond this step was not an intended objective of this investigation.

Guidelines

The following statements constitute the recommendations.

1. Involve the nurses who have been intimately associated with the care of (seriously) ill children. These nurses can focus aspects of care that others may tend to overlook.
2. The pediatric intensive care unit is a specialty area. The nurses who will work in this unit must

be carefully selected. Interest and proficiency in pediatric nursing in addition to specialty area preparation is desirable.

3. Policies are necessary for the day to day function of the unit and must conform to the overall policies of the institution.
   a. Registered nurse coverage for the pediatric intensive care unit should be at least two nurses per five children and one nurse in the unit at all times whenever a child is present.
   b. Provision should be made for the nurses to rotate to the general pediatric unit when patient census in the intensive care area is low.
   c. Provision for staff development and education should be made including cardiac and respiratory resuscitation and the use of specific equipment.
   d. Visiting hours should be unlimited but visiting by parents should be restricted when procedures or treatments are being performed on the child.
4. If it is not feasible, in terms of economics or patient numbers, to have a pediatric intensive care unit, a specially designated area on the pediatric service is preferable to the practice of transferring children to the adult intensive care unit.

5. Equipment and supplies should be available and accessible at all times.
   a. A variety of emergency type equipment (laryngoscope blades, ambu masks, tracheostomy sets, endotracheal tubes, airways, catheters, and so on) should be available in a range of sizes from infant to adult.
   b. Monitors, defibrillators, respirators, oxygen, and suction should be in working order and optimum condition at all times.
   c. The emergency cart should be set up with frequently used pediatric medications and dosage forms.
6. The physical environment is of great importance to the nurse, the child, and the parents. The environment can be enhanced by meeting the following conditions:
   a. Utilizing bright and cheerful colors.
   b. Including posters, murals, and mobiles that depict items which are significant to children.
   c. Providing windows for differentiation of day and night.
   d. Having available music or television for stimulation of the child.
7. The preferred type of unit is spacious and flexible.

a. The nurses should be provided with easy accessibility to all patients.

b. The patients should be seen and heard without difficulty by the nurse yet have maximum privacy from one another.

c. A lounge area should be provided for the staff so they may disengage themselves periodically from the tensions created within the unit.

d. Parents should be provided with a special lounge area.

e. A room should be available for an "on-call" physician.

These guidelines do not represent the entire spectrum of possibilities. They are, however, a summary of the ideas emphasized by the nurses as the most important items to be considered for a pediatric intensive care unit from their viewpoint.

Restrictions of This Study

The focus of this study was possibly restricted in the following manner:

1. Only registered professional nurses working or who previously worked in the past year in staff level positions in pediatric units and intensive care units were interviewed.

2. The number of nurses interviewed at each of the six hospitals was limited by the availability of the investigator, patient care situations within the specific unit, and the availability of registered nurse personnel.
3. Information from one segment of the sample was collected by the group interview technique. Responses obtained in this manner are often biased from a previous comment. It is possible that different information would have come forth had all the interviews been done on an individual basis. Any one group used as informants cannot be expected to know or to provide all the information which is required for total representation.
4. The data were fitted into a model for the purpose of analysis, thus limiting the number of options available to pursue. Without the imposed limitation, the possible number of categories is endless.

Recommendations for Further Study

On the basis of the results obtained from this investigation, the following recommendations for further study are listed:

1. Repetition of the study to test the validity of the findings.

2. Repetition of the study utilizing parents, children, physicians, administrators, and other medical personnel as informants and compare the results obtained with this study.
3. Designing another study to ascertain the factors which may be important in developing other forms of health care facilities.
4. Investigation and comparison of what elements nurses say are necessary to care for patients and what elements actually exist for such care.

CHAPTER VI

SUMMARY

Planning for patient care areas is a demanding role for nurses to fulfill. Nurses are knowledgeable in regard to the needs for patient care; yet, in the past they have been rarely, if ever, consulted when the patient care areas are created. Melding these two ideas led to the inception of this study. A pediatric intensive care unit was chosen as the target for the investigation because such a unit is relatively new to hospital design and the nature of the unit is very specific.

The conceptual basis for the study integrated selected aspects of management principles, a framework for hospital design, and organizational change theory. A schematic diagram was utilized to examine the steps of the planning process.

Review of the literature, as a support for the study, focused on five areas: the history of the intensive care concept, intensive care as an advanced system of nursing, development of pediatric intensive care, the design of patient care areas, and related reports and research studies.

The investigator constructed an open-ended questionnaire to obtain information about the care of seriously ill children and the development of a pediatric intensive care unit. Thirty-six registered professional nurses constituted the sample and all were questioned by the investigator in individual or group interviews. In all cases, the data were collected in the verbatim context. Thirty-three nurses were employed in staff level positions and engaged in clinical nursing activities in pediatric units and intensive care units at the time the study was conducted. Three nurses were not actively employed at the time the study was conducted but were engaged in related nursing activities and had worked in pediatrics or intensive care within the previous year. The setting for this study comprised six selected general hospitals in a large metropolitan community in the southwestern United States.

Because the nurses made several comments to each of the questions asked of them, a large volume of data resulted. Categories, which were established by the investigator, focused on patient care, equipment and supplies, policies, attitudes, and environment-space and esthetics. The investigator found that the concerns of the nurses were directed toward three distinct groups of people: the nurses as a group, the seriously ill children, and the parents. A simple chart with two parameters, categories and direction, provided a means of interpreting the ideas of the nurses

into potential guidelines for a pediatric intensive care unit. To obtain a general overview of all the data, and grasp some of the interrelationships of the data, the investigator developed a three dimensional model to facilitate this operation. The three parameters of the model reflected categories, directions, and operational sequence.

The results of this study indicate that nurses' ideas about the nature of patient care facilities can be translated into guidelines and potential design criteria. Nurses could be significant contributors in planning and designing patient care facilities, if given the opportunity to participate.

APPENDIX A

EXPLANATION PRIOR TO INTERVIEW

1. Introduction of the investigator--Marita S. Bowden, a graduate student in the College of Nursing, The University of Arizona, studying for a Master of Science Degree with a Major in Nursing.
2. Purpose of the study--To obtain answers to the following questions: What do nurses know about the care of seriously ill children? What concerns do nurses have about the care of such children? How can the ideas of nurses be translated into a design or guidelines for a pediatric intensive care unit?
3. In thinking about your answers, try to remember some of your experiences with seriously ill children--what happened, what you did for them.
4. The term "seriously ill child" is used interchangeably with "critically ill child" or "acutely ill child"--a child in or experiencing a life threatening situation.
5. Do you have any questions or comments to clarify?

APPENDIX B

REVISED QUESTIONNAIRE

Hospital_____

Number in sample_____

Part A. Information from Nurses Regarding the Care of the Seriously Ill Child.

1. Describe what causes you the most concern when caring for a seriously ill child.

2. Define the role of parents when their seriously ill child is in the hospital.

3. What is your concept of a pediatric intensive care unit?

4. How does this differ from an adult intensive care unit?

5. A pediatric intensive care unit is being planned for the pediatric service in your hospital. Since you are experienced in the care of ill children you have been asked to join a planning team consisting of a pediatrician, an intensive care nurse, the hospital administrator, and an architect. What are some of the "things" that you would include to make this the best or model pediatric intensive care unit?

Part B. Background Information.

1. Current area of nursing practice._____

2. What is your immediate past experience in nursing? This may be up to twelve months before starting to work in your present position._____

3. What background do you feel is necessary for a nurse to work in a pediatric intensive care unit?

4. Would you work in a pediatric intensive care unit?_____

5. Tell me what happens when a seriously ill child requires care at your hospital.

6. What is the number of pediatric beds at this hospital?_____

7. How many beds are allocated for an adult intensive care facility?_____

APPENDIX C

EXAMPLES OF RESPONSES OF 36 NURSES OBTAINED DURING INTERVIEWS

		Operational Sequence		
Concern	Direction	Expression of Concern	Implications	Decisions and Implementations
Patient Care	Nurse	need for getting medical attention quickly	availability of consultation	room for on-call M.D.
		not sure that I'll know what to do	need to have certain skills and techniques	staff education
	Child	rapid change in child's condition	possibility of cardiac or respiratory arrest	use of monitoring equipment, portable or built-in
	Parent	the need to assist in the care of the child	supplies and equipment available and within easy reach	actual handling of the child in the intensive care setting
Equipment and Supplies	Nurse	available when needed	quick and easy accessibility	trays and carts set up with the necessary equipment and supplies
	Child	equipment in pediatric sizes	variety of sizes	equipment such as laryngoscopes, ambu masks, tracheostomy sets

		Operational Sequence		
Concern	Direction	Expression of Concern	Implications	Decisions and Implementations
	Parent	anxiety about equipment	needs to know function and how it will be used with the child	explanation by staff and utilization of the equipment if possible
Policies	Nurse	staff to provide good care to patients	staff needs to be child oriented and skilled in the care of seriously ill children	high nurse patient to patient ratio
	Child	type of patient belongs in the pediatric intensive care unit	children with problems related to heart surgery, renal disorders, neurological disease	nursing needs of the child; policy considerations
	Parent	visitation as an important to the parents	parents are necessary for support and well being of the child	unlimited or extended visiting hours

		Operational Sequence		
Concern	Direction	Expression of Concern	Implications	Decisions and Implementations
Attitudes	Nurse	cannot work in high tension areas all the time	ability to cope with the seriously ill child decreases	lounge for the nurses
	Child	children hear and see more than they should	hospitalization is frightening and impedes adjustment to the situation	private rooms in the pediatric intensive care unit
	Parent	become emotional and apprehensive because of the child's illness	may create problems in communicating with staff	staff needs to be understanding of the problems and be available to talk with parents
Environment, including space and esthetics	Nurse	good visibility from any point	nurse must be aware of all the happenings in pediatric intensive care unit	circular unit with the nurses' station in the middle
	Child	make it look like pediatrics	child needs certain objects that he can identify with	use bright colors, murals, posters, mobiles, and toys from home

		Operational Sequence		
Concern	Direction	Expression of Concern	Implications	Decisions and Implementations
	Parent	parents need a place which is private where they can rest, wait, or sleep if necessary	parents are often times not permitted in pediatric intensive care unit when certain procedures are performed on the child	a separate lounge for parents

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