THE IDENTIFICATION OF PATIENT CARE REQUIREMENTS IN A UNIVERSITY HOSPITAL

By

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CHAPTER I

INTRODUCTION

Prior to 1973 there was little agreement in the nursing literature regarding the variables inherent in the numbers of nursing personnel needed to satisfy patient care requirements. The variables identified when matching the patients care requirements with staff were: patient needs, quality of care and control, complexity and intensity of care, and levels of practice. Aydelotte (1973) recommended that patient classification schemes be utilized to identify care requirements, and lend themselves to computerization.

Patient needs for care and the number of staff available for service have always fluctuated daily. A means of providing a positive correlation between these two variables was needed (Price, 1970). To date patient classification systems have been the means used to categorize patients according to some specified scaled criteria and to provide data by which nurses could optimize staffing decisions. These systems have been built around a set of variables that are fairly universal: special characteristics of the patient, capability of the patient to care for self, acuity of illness, requirements for specific nursing activities, and skill level of personnel required for care (Aydelotte, 1973).

Quality of service is presently being measured in nursing by several quality assurance methods. Quality refers to excellence of an action or a process while assurance implies

a guarantee of excellence. Quality assurance measures can be approached from various frames of reference such as activities and processes of patient care, available resources, or desired outcomes. Process measures are concerned with existing conditions, while outcomes focus on a desired change based upon predetermined criteria (Bain, R.J. & D.J. Froebe, 1976; Zimmer, 1974).

Additionally, hospitals and nursing services in trying to maintain quality subscribe to the standards as set by the Joint Commission on Accreditation of Hospitals, (JCAH). Standard one of the JCAH under nursing services states:

> The number of registered nurses and ancillary nursing personnel needed for each nursing care unit can be determined only by evaluating the needs of the patients and the capabilities of nursing staff assigned to the unit. To assist in this determination, records and reports of both staffing patterns and patient needs should be maintained for comparison. These documents should identify the staffing needs of each clinical department/service and nursing care unit, the characteristics of the patient's assignment and the kinds of nursing skills needed by the current categories of patients in each unit. In all instances, a registered nurse must plan, supervise and evaluate the nursing care of each patient (JCAH accreditation manual, p. 53).

Traditionally university hospitals have maintained the highest ratio of registered professional nurses and the lowest ratio of ancillary personnel. The rationale for such a staffing pattern has been that teaching hospitals are large hospitals with a higher proportion of complicated surgeries and patients which require a longer length of stay. University hospitals generally handle more complex cases for teaching purposes and therefore require more professional nurses (Levine & Phillip, 1975).

When one considers the complexity of patient care requirements as well as the varied measurement systems for classifying patients, the task of matching necessary nursing care resources with patient needs remain a dilemma to every nurse administrator (Berry, 1975). Consequently, as a first step in addressing this dilemma, researchers have recently concentrated on developing a valid patient classification system as a means of estimating the complexity of patient care requirements.

This study will focus on patient care requirements existing in a university hospital at the University of Oregon Health Science Center. It will be a partial replication of a study conducted at the University of Arizona Medical Center Hospital using a valid patient classification system based upon the processes of patient care. It will be descriptive rather than directed toward prescribing staffing patterns.

Review of the Literature

The review of the literature will incorporate the following dimensions: the hospital as an organization and the role of the nurse within the hospital organization; patient classification systems, their characteristics, purpose, and utilization within the hospital.

The Hospital as an Organization

Georgopoulos (1972) describes the hospital as a complex social organization and its members as psychologically organized and integrated persons. Both the hospital and members are problem solving systems. The members must be able to adjust to the requirements of the work technology and the physical features of the work place. They are called upon to perform their roles reliably and to achieve and maintain high levels of performance.

The basic organizing principle that underlies all activities in the hospital is the key objective of service to the patient. There is also concern in the hospital for efficiency and predictability of performance while rendering this service, and concomitantly an emphasis is placed on economic efficiency.

Hospitals are sometimes compared to factories for purposes of organizational research. Unlike other organizations which can lend themselves to mass production techniques hospitals are human machine systems. The raw material and end product of a hospital is human and the work within the

organization is too variable and irregular to permit coordination through any means of standardization. Motivating its members to the goal of the institution is less a problem than in other organizations. The goals of individual members and the objectives of the organization are congruent since both are directed to the patient (Georgopoulos and Mann, 1962 & Stevens, 1975).

There is an absence of a single line of authority in the hospital organization as compared to other organizations. Authority is shared by the board of trustees, the physicians, the administrators, and the nursing service director. Heydebrand (1973) identified two aspects within the authority structure in the hospital organization: decision making and supervision.

The interdependent and interlocking dimensions which exist when considering the skills and tasks within the hospital organization are: professionalization and specialization (Georgopoulos, 1972 & Heydebrand, 1973). The technical specialist is the person who can perform the more routinized functions, while the professional performs the complex services of the trained expert with the knowledge, judgement, and specific client orientation. A highly skilled or professional worker's activities are self-regulated in that he has internalized both operative and regulative rules of a profession or organization while the unskilled worker must have rules specified and their application supervised.

Two aspects of technology which are relevant to all organizations are discussed by Perrow (1967). The first deals

with exceptional cases encountered in the work and the nature of the search process when exceptions occur. He refers to the search process in exceptional cases as analytical and on a logical basis and labels the technology in this instance as nonroutine. The second aspect of technology deals with ordinary cases in which analysis is not necessary and a formal search is not required. This aspect he labels routine technology.

If tasks are not routine and they require discretion there will be considerable interdependence and uncertainty surrounding them. This will necessitate the subordinate and superior in an organization to consult frequently to exchange information and search for optimal solutions to difficult problems. The nonroutine tasks have little certainty regarding their methods, whereas the routine tasks have well established techniques which are sure to work when applied to similar raw materials.

The hospital with its primary goal of satisfying patient care requirements is a nonroutine type of firm characterized by analyzable search processes and the need to deal with exceptions. Perrow (1970) states that in this type of organization both discretion and power are high with coordination provided through feedback rather than through advanced planning. Structural coordination and professional coordination are two methods by which feedback come about. The structural coordination is accomplished through department specialization and the professional nurse acts as a key person in the

professional coordination processes within the hospital organization (Heydebrand, 1973).

Other variables in addition to the authority and task structure within the hospital organization have a bearing on the complexity of patient care requirements and the economic efficiency of the organization. Two such variables are the size and the age of the hospital. Organizational size of a hospital can be measured by the number of patients, number of admissions, number of beds, number of employees, assets of the organization, or total resources. Organizational complexity of an institution can be measured by case mix, environmental complexity, division of labor, technological complexity and departmentalization or scope of service. There is a strong relationship between task complexity and the organizational size of a hospital. "Complexity and size are positively and strongly related to each other, r = .70" (Georgopoulos, 1972, p. 89).

The age of an institution is a variable which has a bearing on the organizational complexity and environmental relationships within the hospital. Presumably older organizations are internally more differentiated and complex than newer ones. Older hospitals are more stable and have firmer ties or roots in the external environment. Professionalization and specialization run high in older teaching hospitals. The overriding effect of age, size and service in teaching hospitals increases the task complexity of teaching institutions (Heydebrand, 1973).

The Role of the Nurse in the Hospital

Nurse for purposes of this study refers to all registered professional nurses within the hospital and entails managerial functions as well as patient care functions, regardless of the mode of care delivery within the patient care unit.

The term role in this study refers to more than the conduct associated with a certain position. "A role consists of one or more recurrent activities out of a total pattern of interdependent activities which in combination produce the organizational output" (Katz & Kahn, p. 179). The term role as it relates to nursing entails all of the nursing care activities to satisfy the patient care requirements and the hospital organization. These activities are often nonroutine in nature and entail the identification of individualized patient care requirements. Therefore, the nurse in the hospital functions within the hospital authority structure of decision making and supervision (Heydebrand, 1973).

The decision making process of nursing is described by Haussman and Hegyvary (1975) as the comprehensive set of nursing activities that are performed in the delivery of patient care. The four phases of the process are: assessing patients problems and needs, planning care, implementing the plan, and updating the plan by evaluating the patient's response. The professional nurse then communicates the decision-making in the care through an individualized pain 1a based upon her assessment and findings. This plan is recorded on

the kardex. The kardex thus serves as a written communication instrument and identifies a patient's care requirements from which nurses plan, set priorities, and delegate responibilities to insure continuity in the care process over a period of time. The kardex also serves in the coordination of intraunit activities and extraunit services between departments (Georgopoulos & Jackson, 1970).

The second component of the professional nurse's authority in the hospital rests in the supervision and delegation of technical tasks to her subordinates for coordination of patient care requirements. Volante (1974) recognizes delegation as a process a supervisor or manager employs to get the work done through other personnel, and considers delegation a major skill of the nurse in the supervisory role. The nurse will consider the factors of patient care requirements and acuity of illness as well as the subordinates knowledge and skill level when delegating and assigning the work to be done (Beyers & Phillips, 1971; Douglass & Bevis, 1974).

The nurse's decision making and supervisory roles within the institutional process function within two systems in the total complex of patient care. One is medical in nature and is concerned with the therapeutic practices as well as the diagnosis and treatment. This is the "cure" process. The "care" process deals with the ministering function and is committed to the physiological, psychological, emotional and social needs of the patient. The "care" function includes

the perceptive surveillance, interpretation and selective action applied to the patient's condition. The "care" and "cure" processes overlap and nurses in the hospital are involved in both processes (Mauksch, 1966).

The professional nurse also acts as a conveyer of institutional directives to the operating level of the hospital organization. The implementation and enforcement of hospital policy to the extent that it affects patient care is implicitly placed on the shoulder of the head nurse or unit manager. The nurse also acts as a delegate of the physician. Although she is employed by the hospital most of her work results from the "cure" process. The coordinating function necessitated in the hospital because of the highly specialized and bureaucratically organized system of technical tasks and responsibilities, is a function of authority nurses have accepted in addition to the "care" and "cure" processes as described by Mauksch (Davis, 1966).

The nurse's role in the hospital is complex, diversified, and often in conflict between bureaucratic and professional norms. There is a dual value system of authority and responsibility under which the nurse in the average general hospital functions. One system considers that service to the patient is the paramount objective; the second is primarily concerned with the economic and maintenance problems that determine the quantity and quality of service. The nurse functions within the conflict of the humane, personalized, quality of care on one hand and the predictable, efficient, economical services conception on the other (Brown, 1965).

At the present time the "care" processes in nursing are directed toward comprehensively identifying patient care requirements as demonstrated by the recording of patient histories, nursing audits, nursing rounds for the surveillance of care, and patient care planning. The refinement of patient classification systems based on patient care requirements could add an additional valuable dimension to the "care" process.

Patient Classification Systems

Studies in the nursing literature on patient classification systems have been based on the tasks of nursing and have consisted of time and motion studies, functional studies, hospital statistics, the nurse's perception of the patient's needs, manpower supply, and educational preparation of staff. These have most often been conducted in one clinical area or on an intraorganizational basis.

The study in the nursing literature on patient classification which has had the greatest impact on staffing methods was conducted by Connors and the Johns Hopkins Operation Group as early as 1961. Johns Hopkins University Hospital called in specialists in the physical and social sciences with the intention that their training and techniques of inquiry and analysis would shed light on the complex physical and human system of patient care. Nursing administration, using a patient condition questionnaire, computed the daily

measure of nurse hours of direct patient care. In the same study there was observation of patient care activity and all direct care was noted, timed and recorded. The patient's condition was described as to the level of need in the areas of mobility, state of consciousness, emotional state, adequacy of vision and isolation. From this study was noted a combination of levels of problem areas with greater and lesser amounts of nursing care which suggested the possibility of numerical scale for measuring the care.

Connor defined three levels of patient needs: self-care for those patients who walked and fed themselves, which required 27 minutes average care time, partial self-care requiring 53 minutes of care time, and total care of 137 minutes or five times that of the self-care patient. From the knowledge of the number of patients in each classification and the average care time associated with each the workload could be estimated.

This study resulted in the creation of the Johns Hopkins Classification System which is a combination of a factor or item by item evaluation with a prototype evaluation design which require the assessor to match the patient being classified with one of several mutually exclusive categories. The items are checked and counted and the totals result in one of three pre-established categories (see appendix B).

Although the variables Connors used were geared to factors associated with nursing problems and pathophysiological in nature, how representative they were of the problems

nurses deal with and how they were distributed in the patient population were open to question. No formal test for validity was reported in the literature. The writing of Connors, Flagel, Preston, and Singer, however, made a great impact on staffing methods (Aydelotte, 1973).

A survey of the nursing literature by Berry (1975) revealed that no valid, reliable multidimensional factor evaluation instrument for patient classification was in existence and such an instrument was needed. The Arizona Medical Center Hospital was using an instrument which quantified patient's needs, used a five-category scaled classification system and appeared to measure more than the limited physiological dimensions of patient care. Berry conducted a study which was directed toward vigorously testing the Arizona Medical Hospital Classification System for validity and reliability in the medical, surgical, pediatric, obstetric, intensive care and orthopedics clinical services at the Arizona Medical Center Hospital. Twenty-four volunteer nurses acted as data collectors. Group I was day nurses, group II the evening nurses who worked on the same unit as day nurses, and group III were float nurses working on different units from the day-evening group. The day-evening group received the Arizona Patient Classification System form and descriptive criteria (appendix C), while the float nurses were given the supply of Johns Hopkins Classification form and descriptive criteria.

Three periods of four hours each were scheduled for data collection on nine study units and required twenty-eight days

to complete. Rating of the entire population of inpatients comprised the data used for analysis. Findings indicated the scale could be used by a number of raters. The reliability coefficient of r = .90 for total inter-rater reliability showed an acceptable level of consistency in the use of the scale. The reliability coefficients for inter-rater reliability by clinical service ranged from .68 (O.B.) with the others at .80 through 1.11. These data suggest the scale could be used in a variety of settings with consistency. Criterion validity for the physiological dimensions of the instrument was also demonstrated by Berry. Validity coefficients ranging from .74 to .76 indicate a fairly strong degree of agreement on identified nursing care requirements using matched rating on the Patient Classification Scale of the University of Arizona and the Johns Hopkins Classification System of Connors et al. (Hinshaw, 1975).

Patients were categorized from Class I through Class V as follows according to complexity of care:

Table 1.

Scale of Classification for the University of Arizona Patient Classification System

Classification by Complexity of Care	Total Score
I	0-7[a]
II	8-15
III	16-31
IV	32-49
V	50 or above[b]

a. Low complexity of care.
b. High complexity of care.

The testing of the instrument by Berry was conducted in a teaching hospital and her findings could not be considered generalizable to hospitals with dissimilar orientations and objectives. With the consistency of inter-rater reliability however, the instrument was eligible for further testing interorganizationally. Hinshaw in 1975 utilized the instrument interorganizationally. This review of the literature will focus on her study at a later time.

Early observational studies with care related dimensions were reported by Williams (1960), Connor (1960), and Wolfe and Young (1965). In the Williams study a committee composed of three nurses, one industrial engineer and one psychologist developed a "patient profile" which served to identify these seven patient needs: nourishment, elimination, rest, exercise, social interaction, safety, and therapy. The instrument proved reliable when used by different observers, but was not used in further investigations. Williams and his committee recommended it be used as a basis for inservice education, for patient transfers from intensive care to self-care wards, and as a means of communication between nurses on different shifts.

Connor's observations were made on patients who displayed problems in the areas of emotional disturbances, inadequate vision, and isolation. He observed patients while nurses were taking temperatures, giving baths, making beds, and comforting and helping with food and medications. He found that patient care was a function of the number of patients of each type rather than census alone.

Wolfe and Young studied nursing personnel with the intention of identifying some numerical figure which could predict nursing load based on patient care needs. They used the Johns Hopkins Classification Instrument and found that the amount of care was the sum of both direct and indirect care needs of each patient. Aydelotte (1973) claimed their statements indicated that these men were not knowledgeable about aspects of specific assignments for personnel or the product of quality and how it should be examined. The studies were highly reflective of a technical approach to practice and they neglected the needs of critically ill patients who required professional as well as non-professional attention (Aydellote, 1973).

The University of Vermont Hospital utilized a patient classification system for allocating patient care facilities based upon the level of patient care needs. Preston (1964) reports how an inpatient nursing condition survey, as well as an outpatient and emergency room survey was done by nurses and physicians for the planning and expansion of the university hospital.

Nurses have formulated patient classification systems for the purpose of staffing allocation (Pardee, 1968; Poland, 1970; and Thomas, 1971). Pardee based her criteria for classification on patient condition, treatment, and/or procedures peculiar to a clinical area. She found the criteria for categories varied between different clinical services to a greater extent than was expected, and her data proved helpful

in planning staffing needs. Poland et al., reported on the assignment of physical care units (PCU) to patients in the areas of diet, vital signs, cleanliness, suction and oxygen therapy, toileting and turning. Five intensities of care were formulated according to time spent with the patient ranging from 7.5 to 90 minutes. These were referred to as nursing care units (NCU). Levels of intensity were estimated in the patient need areas and PCU's were matched with NCU units. The authors considered these units as indices for daily trends in patient care requirements and nurse staffing needs.

Another nursing venture at patient classification was through a task force of the California Nurses Association, who classified patients according to the acuity of need for care along a continuum as those requiring intensive, moderate, minimal, or no nursing care. Criteria utilized for classification were: physical restriction, emotional factors, nursing procedure time, and instructional needs. The standards committee further identified classifications of nurses to meet the needs of the patients in the three classifications according to their clinical, administrative, of educational nursing expertise. The system was regarded as a valid way of judging the worth of a nurse's practice to meet patient's needs at varying levels, and was acknowledged by Thomas (1971) as an opportunity for nurses to analyze, criticize, question, and think creatively about nursing practice.

Consultative services have been utilized in many areas of the country by hospitals and nursing services to devise patient classification systems for staffing purposes. Nursing judgement and the skills of industrial engineers have worked out various classification systems that are essentially similar in their criteria. Patients are categorized according to intensity of illness and care times are formulated for each category (Georgette, 1970; Jelnik, 1973; O'Malley 1969; Warstler, 1970). Industrial engineers have been able to quantify nursing activities, demonstrate patterns and trends, point out problem areas, design graphic materials and findings, and provide efficient forms for use. Donovan (1975) recognizes that often these engineers meet resistance, but her experience has been that they provide realistic measurement and data on which to base decisions and actions.

Patient classification systems are not without their faults or problems. The more negative aspects in the utilization of these systems are recognized by Donovan, 1975; Price, 1970; and Ryan et al, 1975. The systems measure more of the technical aspects of nursing and measure care as it exists. Nursing services are not static however, but are continually trying to increase their quality of care toward more comprehensive goals. The systems are not flexible or comprehensive enough to measure all the possible variables within the patient care situation. The variables between clinical services can be diverse as they are between institutions. This makes it difficult to generalize about the

effectiveness of a system from one clinical service to another or interorganizationally.

A more recent report in the nursing literature directed to a more comprehensive and flexible classification system was reported by Ryan, Barker, and Marciante (1975). MESA, an engineering service, and nursing service of the John C. Lincoln Hospital in Phoenix, Arizona, worked toward a twofold goal of accurately predicting how much nursing time each patient would need during eight hours and identifying the level of nursing skill required. Nursing administrators looked at nursing care needs as described by Kakosh (1959), while team leaders considered patient care needs. As a result, nursing service and the team leaders developed a more comprehensive acuity rating guide in 10 categories. The categories included: bath, activity, medications, treatment, dietary needs, vital signs, social needs, special tests, respiratory needs, and a special factor evaluation section to which additional needs could be added. This allowed for a rating of all factors applying to a specific patient. Team leaders and nursing administrators have found this format comprehensive and helpful in providing more independence in staffing decisions based on individualized, personalized patient assessment. The engineers devised staffing tables mathematically relating to patient acuity ratings and to skill levels of nursing hours for each nursing unit.

Hinshaw's study referenced earlier in this literature was interorganizational in scope making it possible to compare

care requirements in different types of hospitals. The rationale for the study was that technological advances and changing value systems have forced an increased use of health services with a decline in economic resources. The utilization of personnel based on patient care requirements was a central theme of the study and the following questions were addressed: Do requirements for nursing care vary in different types of hospitals? Do nursing care requirements of clients in teaching hospitals differ from those rated in private community and county hospitals? Do clients in teaching hospitals have greater requirements on care dimensions which must be delivered directly by professional nurses?

The classification system validated by Berry was utilized to document patient care requirements. These requirements were measured by 16 raters in the following six hospitals: a university hospital, a county hospital, two private hospitals, a community retirement hospital, and a community medical center. Data were collected for 12 days and a total of 15,566 patient cases were recorded. The raters obtained the data from the kardex of each clinical unit supplemented by contact with the charge nurse in instances of missing data. The raters were assigned to a specific clinical unit for 12 days of data collection. Clinical services surveyed were medicine, surgery, pediatrics, obstetrics, and critical care units. Patient care requirements were measured in the eight categories of the classification instrument: activity, hygiene, feeding, medication, vital signs, treatment and

medical orders, physical or mental impairment, and the emotional component.

The mean value of patient care required by clients in the various clinical services, was shown in each major category of the patient classification system across the six different hospitals. The Duncan range procedure was used by Hinshaw to determine if a significant difference existed between these mean values. Significantly higher mean values existed for patient care requirements in the emotional category in the university hospital as compared to four other institutions. Biases of nurses in the hospital system and the fact that the patients in the university system do not have a private M.D., but rely on the nurses for emotional support were noted as reasons for this finding.

The university hospital had fewer care requirements in the feeding, hygiene, and activity categories than other hospitals. All other hospitals had a higher percentage of patients 65 years or older during the data collection period. The percentage range for patients 65 years or older was 38.7% to 68%. The university hospital had an average of 21.5% at the time of data collection. The dependency need of the geriatric patient in the areas of feeding, hygiene, and activity account for the increased patient care requirements in the other hospitals.

There was no significant difference in the medication or impairment category between the six hospitals. The university and community retirement hospital had fewer patient care requirements in the vital signs categories. The fact that

routine orders varied and no routine was given for the community retirement hospital or university hospital contributed to this finding. The community hospital showed significantly higher mean values in the treatment and medical order category as a result of the more complicated surgeries. When considering total mean values between hospitals the significantly higher values for the community medical center in surgery, critical care and pediatrics were explained by the volume and types of surgeries conducted (Hinshaw et al, 1975).

Using Perrow's theoretical framework as her rationale, Hinshaw categorized the emotional, impairment, treatment and medical orders, and the administration of medications as more often nonroutine technology which are less apt to have standardized procedures and are less predictable. She inferred these areas most often require direct implementation by professional nursing staff. The university hospital showed greater nursing care requirements than other hospitals in these areas and therefore could require more professional staff to meet the needs. Clients showed fewer care requirements in the areas of vital signs, feeding, hygiene, and activity. The latter care requirements were labeled as routine tasks and it was implied they could be safely delegated tasks to non-professional staff.

The theoretical framework of Perrow for the delegation of tasks to the lowest level of employee does not encompass the variables of acuity of a patient's illness or staff's level of competency to meet the patient's care requirements.

Hinshaw's descriptive study did not test the theoretical explanation upon which she based task delegation.

A low level task in a task analyzed classification scheme can be attached to a complex patient with varying degrees of physiological as well as psychosocial needs (Stevens, 1975).

Rawlinson (1976) pointed to the consideration that all nonroutine factors do not necessarily always occur infrequently or lack standard procedures, nor do all routine factors necessarily occur frequently and have standardized procedures. Several questions relating to the methodology Hinshaw used are raised. Since there were 12 consecutive days of data collections and raters were assigned consistently to one clinical unit, one questions how duplication of data or rater error were avoided. In regards to the kardex data, were all data complete and were the formats consistent between the hospitals? Was there some degree of consistency in the quality of the kardex documentations? One wonders why Hinshaw did not include another university hospital among the other five hospitals surveyed (Rawlinson, 1976).

Indirect care requirements or the number of inter-health team contacts and demands on nursing personnel were not included in this study. Only direct care requirements were measured. However, this issue is of particular interest in a university hospital because of the amount of time nurses spend in coordination of specialized services as well as the large numbers of contacts made with health care students of

a variety of disciplines. A patient with a high complexity of patient care requirements could also require more coordination of activities and consultative requirements.

Scientific managers have tried to measure nursing output by their own concepts of time and human effort. This has led to the innumerable studies in the review of this literature. Nursing tasks have been analyzed on the basis of time and the delegation potential for the task directed to the lowest level of employee possible. This is where management science theory presents problems for nursing practice, for patients refuse to act like programmed units (Stevens, 1975). Patient care requirements, task complexity, and staff capabilities are more frequently assessed by nurses on an individualized basis as described earlier in the review of this literature.

It is difficult to make exact statements about the amount of staff necessary to satisfy patient care requirements. The variables that confound any precise statements are the patient's diagnosis, age and complexity of illness as well as the individual variations in staff knowledge and skill. It is impossible to quantify the inherent qualitative variables at this time.

Purpose of the Study

The study was a partial replication of the Hinshaw study. Its purpose was to identify mean patient care requirements at the University of Oregon using the University of Arizona Hospital Patient Classification System. The variable of institutional age between the two university hospitals was considered when comparing the mean patient care requirements.

The study focused upon the following questions intra-organizationally: What were the patient care requirements at the University of Oregon Hospital? Did the patient classification system comprehensively measure a patients care requirements? As a basis for staffing, is the patient classification system representative of the nurses' work situation in a university hospital?

This study differed from the Hinshaw study in that six factors in the patient classification system were documented in addition to the eight categories reported in her study. The patient classification system was critiqued.

Interorganizationally the following questions were addressed: Was there a difference between patient care requirements at the University Hospital of the Arizona Medical Center founded in 1971, as compared to the University Hospital of the University of Oregon Health Sciences Center founded in 1956? If so, in which categories of the patient classification system did patient care requirements vary?

CHAPTER II

METHOD

Setting and Subject

The population for this study was drawn from the University of Oregon Health Sciences Center Hospitals. These hospitals are affiliated with a school of dentistry, school of medicine and allied health, and a school of nursing. The North hospital has a bed capacity of 162. The obstetrical clinical service was surveyed in this hospital. The South hospital has a bed capacity of 338 and the medical, surgical, pediatric, and intensive care clinical services were surveyed in this hospital.

Instruments

Data for the study were obtained from the patient care kardex and documented on the University of Arizona Patient Classification Instrument. A separate classification sheet was used for each unit surveyed. This form was labeled in the upper right hand corner indicating its service, i.e., surgical (see Appendix D).

The date and hour of data collection were noted. Patient room numbers were written in the area for patient names prior to the data collection period. The allocated beds were indicated for each unit under the date. The sample to be drawn from each unit was indicated in parenthesis next to the allocated bed figure.

Under patient name on the classification instrument are columnar boxes for writing numbers reflecting the patient care assessment which corresponds to the vertical list of item weightings on the left hand side of the page. To the left of each number are the item or sub-item. Each sub-item is weighted on a scale of one through nine, representing the amount of nursing care time or complexity required to assist a patient with a specific item of care; e.g., eight for sub-item comatose indicates the need for a large amount of time and care for patient assistance.

At the bottom of the face sheet is a series of blocks for noting the total score and class for each patient listed and assessed. The bottom line was used for category or class designation of the patient. There are five such classifications ranging from Class I with a total score not exceeding seven, through Class V, with a total score of fifty or more. This allows for classifying the patients according to complexity of care as previously described in the study of Berry.

Two other instruments used in this study were the patient care kardex and the medication kardex (see appendix D). Both kardex are kept in files on the nursing station of each unit. The patients care requirements as well as current medical orders and treatments are recorded on the patient care kardex. The patient's current medications are recorded on the medication kardex.

Procedure

A random sample was drawn which represented all the allocated beds for a particular unit. The sample was based on the average six month occupancy percentage of each unit from July through December of the previous year. Table 2 shows the services, units, beds, average occupancy percentage, and sample from each unit surveyed.

The appropriate notations were made on the patient classification sheet. The next six factors in the classification instrument were documented only if noted on the kardex and the figures were computed separately. Patient care requirements were documented from the kardex in the areas of activity, hygiene, feeding, medication, vital sign, treatment and medical orders, physical or mental impairment, and emotional components. The data were collected three days during the week, namely Tuesdays, Wednesdays, and Thursdays. These days were chosen to avoid the admittance and discharge schedules of the weekend.

Two data collection periods were conducted to establish more representative ratings. In that the average length of stay for all patients at South Hospital is 7.9 days, a one month interval reduced the possibility of duplicating data. The order in which clinical units were surveyed in the first data collection period was reversed in the second to balance out any order effects which may have inadvertently occurred.

Table 2.

Data Collection Format, Services Surveyed, Units, Beds and Occupancy Percentage, Sample Surveyed.

Service	Unit	Beds	Occupancy %	N
Medical	8A	26	56	15
	12A	34	79	27
	8C	28	81	23
Surgical	7A	28	68	19
	10A	27	81	22
	9C	28	76	21
	7C	20	65	13
Intensive Care	SICU	8	47	4
	CRR	6	57	3
	MICU	6	65	4
Pediatrics	13A	25	59	15
	14A	23	47	14
Obstetrics	4SE	30	75	23
			Total	203

Data Analysis

Upon completion of the collection of data, a table was formulated from the total patient scores on the bottom line of the classification instruments. The number of patients were noted according to clinical service, their age range and mean age was computed from the classification instruments. Patients were placed in classification according to the complexity of their care. Percentages in each classification were noted.

Mean figures were totaled for each category by summing the numbered subitems across each column and entering this figure to the left of the weighted figure (see example appendix D). These figures were then divided by the total number of patients categorized on a unit to obtain the mean amount of patient care required in each category. The totaled mean category figures were placed in a table depicting each category according to clinical service. A total mean patient care requirement figure was computed for each clinical area by summing each category mean figure. These total mean patient care requirements were entered into a table according to clinical service along with the total mean patient care requirements from the University of Arizona Hospital. The category mean figures were entered into eight separate tables along with the corresponding category mean from the University of Arizona Hospital.

An F test was computed between the means of the first and second data collection periods of each clinical service

to determine if a significant difference existed between the two periods.

Mean patient care requirements in different services at the University Hospital South of the University of Oregon Health Sciences Center were explored. Comparisons between total mean patient care requirements across the five clinical services were made between the University of Arizona Hospital and the University of Oregon Hospital. Z scores were computed to determine if a significant difference existed between the category mean scores of the two institutions.

CHAPTER III

RESULTS AND DISCUSSION

This study was based on 383 ratings of patient care requirements. There were 196 patient ratings in the first data collection period as compared to 187 in the second, a difference of 9 ratings. The total of the two rating periods, which was based on the average daily occupancy rate fell short by 23 ratings because of the lower patient census at the time of data collection. From a total possibility of 26 clinical units, the 23 ratings were distributed in the following services: pediatrics (6), surgical (7), medical (3), and obstetrics (7).

It was of interest to determine if patient care requirements differed between the two data collection periods. In four clinical services there was no significant difference. Only the medical service showed a significant difference, $F(64,61) = 1.64$ $p < .05$. The total patient care requirements tabulated for medical services indicated that more patients were on restricted activity during the first data collection period as compared to the second. This resulted in a range of scores 2 to 6 times higher than those which would be recorded for patients who are independent or in need of minimal assistance with activity. As might be expected, scores in the hygiene and feeding categories were also higher as a result of the restricted or confined activity of the patients. These patients also needed assistance or complete assistance

in the hygiene and feeding categories. During the first data collection period as compared to the second there were more patients who were receiving oxygen and respiratory therapy and requiring closer observation. These therapeutic treatments contributed to increase the total mean patient care requirement scores. These data indicate that a second data collection period was not necessary for 4 out of 5 clinical services, however, the larger sample size adds strength to this study and gives more credence to the tabulated mean patient care requirements.

The remainder of this chapter is divided into two sections, (1) intraorganizational findings of patient care requirements at the University of Oregon Health Sciences Center, University Hospital, (2) interorganizational analysis of data, comparing differences of mean patient care requirements between the University of Oregon and the University of Arizona Hospitals.

Intraorganizational Findings

Age Range and Complexity of Care

The number and age range of each patient surveyed in each clinical service are shown in table 3. The total age range for all services combined varied widely from 4 months to 89 years. The widest range among clinical services was in the intensive care service from 2 to 77 years.

Patients who are 65 years and older require as much as 22% more nursing care time than other patients (Price, 1970 & Donovan, 1975). At the time of data collection there were 79 patients who were 65 years or older in the medical, surgical, and intensive care services. This amounted to only 21% of the total number of patients surveyed. If there had been more patients 65 years or older, complexity ratings could have been greater. The records from the admission department of South Hospital consistently show that patients 65 years or older comprise 20 to 25% of the total census. This 21% finding at the time of data collection appears to be in accord with the hospital records.

The percentage classification in Table 3 indicates the complexity of care required by the patients in the five clinical services. The scale used in this classification was previously explained in Table 1, page 14. The medical, surgical, and pediatric patients are primarily in the class III category or mid-range in complexity of care. This is an expected finding for if the complexity ratings were in the upper ranges of class IV or V, the patients would qualify for intensive care nursing. In the latter clinical service, closer observations and assessments of the complex patient care requirements can be made by the nurse, fluctuation in patient condition can be noted and interpreted, and interventions can be expedited efficiently. The complexity of the class V patient in the intensive care units reached as high as 101 points, or four times the number to qualify for the class V category. While

Table 3

Distribution of Patients by Clinical Service, University Hospital, University of Oregon. Number of Patients per Service, Age, and Percentage in Each Class Denoting Complexity of Care.

Service	Patients per Service	Age Range (yr.)	Mean Age	Percentage in Each Class[a] I	II	III	IV	V
Medicine	127	17-89	50	1	25	50	17	7
Surgical	143	15-83	52	5	16	38	30	11
Pediatrics	52	4 mo.-16	7	5	19	33	33	10
Obstetrics	39	14-39	23	2	59	31	8	0
Intensive Care	22	2-77	39	0	0	0	18	82
Totals	383	4 mo.-89	34.2					

[a] Classification based on the total score of care requirements according to the following designation: 0-7 I, 8-15 II, 16-31 III, 32-49 IV, 50 or more V.

intensive care had 82% of their patients in the Class V category, obstetrics had 61% in the class I and II categories. These two clinical services are at the opposite ends of the continuum as far as complexity of their care requirements is concerned.

Mean Patient Care Requirements

Mean patient care requirements in all categories of the patient classification instrument were consistently higher in the intensive care areas and lowest in the obstetrical unit (refer to table 4).

These data project an expected pattern. Patient care requirements in the obstetrical unit are more routine in character with fewer exceptions occurring, except for the occasional cesarean section, placenta praevia, or preeclampsic patient. The routine tasks such as the application of heat and cold, perineal care and breast care have well established procedures which are not in need of analysis. Under Perrow's scheme these could be considered routine technology and one would expect these tasks could be delegated to a sub-professional employee. The exact opposite is true in the intensive care areas where exceptional cases are encountered which require nonroutine procedures to satisfy the patient care requirements. The potential for delegation of the tasks in both clinical services would be dependent on staff level of knowledge and expertise (Perrow, 1967 & Aydelotte, 1973).

Table 4

Mean Patient Care Requirements of Five Clinical Services in Eight Categories

University Hospital, University of Oregon Health Sciences Center

Service	Activity	Hygiene	Feeding	Vital Signs	Medi-cations	Rx Medical Orders	Impair-ment	Emotional	Total Means
Medical (127) [a]	3.14	2.69	1.61	-	6.14	7.5	0.48	1.03	22.59
Surgical (143)	3.46	2.54	2.26	-	6.83	10.16	1.16	0.61	27.02
Pediatrics (52)	3.75	4.59	2.58	-	4.83	10.39	0.47	0.66	27.27
Obstetrics (39)	1.98	1.4	1.05	-	4.06	6.46	0	0	14.95
Intensive Care (22)	6.44	6.15	3.6	-	11.30	26.24	2.07	1.11	56.91

[a] The number in parenthesis indicates the total number of patients surveyed in each clinical service.

Total mean requirements for the surgical and pediatric services, 27.02 and 27.27 respectively, were higher than those for medical services, 22.59. The higher mean values as indicated in the treatment and medical order column contribute to these figures and result from the major thoracic, cardiovascular, and gastric surgery cases. These cases require more complex nursing procedures which involve chest tubes, gastrointestinal tubes, suctioning, irrigation, dressings, and closer observation. These combinations of treatments result in the 4.43 higher mean requirement for the surgical units over medical units. The higher values of the pediatric unit resulted from closer observations necessitated by the age factor. It was noted that dressings and chest tubes resulting from patient ductus surgeries and urological surgeries also contributed to the pediatric mean in the treatment category.

The following section discusses the eight individual categories in the patient classification instrument. Routine and nonroutine patient care requirements will be explored.

Routine Categories of Patient Care Requirements

The activity, hygiene, feeding, and vital signs categories were categorized by Hinshaw as routine technology. The tasks associated with satisfying patient care requirements in these categories have well established procedures in which few exceptions occur. They require no analysis, and are more predictable.

The inability of the pediatric patient to maintain self-care because of age and/or illness is reflected in the greater mean values in the activity, hygiene, and feeding categories of table 4. Most pediatric patients were in the restricted subcategory and needed assistance in ambulation. They also required assistance or complete assistance in their hygiene and feeding care requirements. Mean surgical patient care requirements in the feeding category are greater than medical. It was noted at the time of date collection that this difference resulted from a number of patients who required tube feeding following radical neck dissections and gastric surgeries. The high mean values in the intensive care units is an expected finding because patients are most often totally dependent in their hygiene, feeding and activity requirements.

These three categories, activity, hygiene, and feeding, are sometimes referred to as activities of daily living. Team leaders were frequently consulted by the investigator because of lack of documentation on the kardex care plan regarding patients care requirements in these activities.

The vital sign category was classified as routine technology by Hinshaw. She related in her study that the vital signs category should be interpreted cautiously. Rater accuracy was found to be questionable in this category except in the intensive care, where electronic monitoring is most often the case. Patient care requirements in this category were confusing for the investigator to document because of the various interpretation given to the term "routine vital signs"

written on the kardex care plan. The interpretation of vital signs varies between clinical units. On one unit "routine" might indicate monitoring only blood pressure once a shift. On another it could mean monitoring temperature, pulse, and respiration ranging from once a shift to every two, three, or four hour intervals. If the house officer was to be notified in case of an elevated temperature, fluctuation in blood pressure, or irregularity in pulse, the patient was categorized under observation in the treatment and medical order category. The patient classification criteria identify frequent vital signs under observation. Because of the unreliability of the documentation, the vital signs category was eliminated from the total mean values as shown in table 4.

The omission of the vital signs category in no way discounts the importance of these signs. They are important in patient assessment and patient care planning. A patient's blood pressure, pulse, respirations, and body temperature can give the nurse important information regarding a patient's physiological condition and stability.

Frequent monitoring of these signs is a component of the assessment process the nurse uses and can be used to verify a patient's physiological condition. They are an objective set of data which help to validate a problem or diagnosis upon which the nurse intervenes, plans the care,or sets priorities for care (Bloch, 1974). The nursing care activities or intervention in patients in which instability is a problem is clearly stated by Beland, 1970.

> Many of the activities of the nurse in the care of these patients are directed toward (1) gathering information about the nature of the internal environment of the patient (2) modifying the external environment so the adaptations the patient is required to make are within his capacity to make, (3) supporting the efforts of the patient to adapt or respond, and (4) providing him with the materials required to maintain the constancy of his internal environment (Beland, 1970, p. 46).

Following the intervention, the signs are evaluated to determine the effectiveness of the intervention and the nursing process is resumed. In view of this explanation of the nursing process as it relates to vital sign assessment, it seems apparent that many exceptions can occur. One can doubt that this category entails routine technology.

It might be safe to say that the technical aspect of the monitoring process, the use of the thermometer or the sphygmomanometer and stethescope, are routine technology; however, the interpretation of the findings and how they relate to patient condition is most certainly nonroutine. The interpretation is non-predictable, requires analysis and formal search, and the decision-making process of the professional nurse (Beland, 1970; Bloch, 1974; Perrow, 1967). The vital signs category entails both routine and nonroutine

technological aspects. If the tasks related to vital signs are delegated, the nurse and her subordinate will consult frequently to exchange information and search for optimal solutions. The coordination process of these tasks will be by this feedback procedure rather than advanced planning (Perrow, 1970).

Identifying the activity, feeding, hygiene, and vital signs categories as routine technology is possible since the procedures which satisfy patient care requirements in these categories are well established, have few exceptions, and are more predictable in their outcome. However, the variable of patient condition is antecedent in the nurses' decision-making process when delegating technical tasks. When one considers using this classification system as a basis for assigning nursing personnel, one must consider patient condition, the nature of the tasks, and expertise of the staff.

Non-Routine Categories of Patient Care Requirements

The medication, treatment and medical order, impairment and emotional categories were discussed and categorized by Hinshaw as non-routine patient care requirements. These categories are areas in which exceptional cases can occur with less predictability. The procedures are not as often standardized and require an analysis and search process.

The medication column of table 4 shows the amount of care required to administer medications in the five clinical services. The empirical range 0 - 16 closely approximates

the theoretical range of 0 - 19 for this category. Obstetrics with the lowest requirements is not an unusual finding in that treatment by medication is not a big component in treating obstetrical patients. Intra-venous feedings or medication are used infrequently. The figure does not reflect the fact that patients most often keep their medications at the bedside for self-administration. Mean requirements in surgical, 6.83, and medical, 6.14, are similar while the intensive care figure of 11.30 would be an expected finding since intravenous medications are most often used in this area. A subcategory indicating self-medication should be incorporated into the system to make the classification instrument more comprehensive. Since patient education and patient compliance are two concerns of the nurse when patients self-medicate, a complexity weighting of five is warranted.

The treatment and medical order category measures the frequency of nursing care requirements to perform ordered treatments, and/or complete necessary observations of the patient's physical condition. The empirical range obtained is similar to the theoretical range; i.e., 0-57 versus 0-61 possible. The surgical mean requirement, 10.16 and pediatric, 10.39, were greater than the obstetric and medical services. The higher mean figures in these clinical areas were discussed earlier in this chapter. Treatment and medical orders in the intensive care services were noticeably higher than in the surgical or pediatric services. Respiratory assistance and therapy along with suctioning and chest tubes were found to add to the

higher mean patient care requirements in the critical care services.

The impairment category of the patient classification instrument is defined as the nursing care required to communicate effectively with the patient. The empirical range was 0 - 14, while the theoretical range is 0 - 16. The wide variation between these two ranges could reflect minimal documentations on the kardex for this category. Another aspect to consider, however, is the fact that 21% of the patients at the time of data collection were 65 years or older. A higher percentage in this age group might add to the subcategories of visual, hearing impairment or confusion. There was no impairment documentation in the obstetrical unit. The most difficulty with communication was in the intensive care services, 2.07 mean patient care requirements. Patients with neurological deficits following cardiovascular accident, neurological surgery of the brain and spinal cord, or patients with visual impairment following corneal transplant and cataract surgeries contributed to the surgical mean value of 1.16. Communication difficulty, confusion, and seizure activity were found to be the impairment problems with which the staff were most frequently dealing.

The investigator made a decision prior to data collection to record the emotional category only if documentations on the kardex reflected that staff were actively dealing with a patient's socioemotional care requirements. The intent was to avoid a subjective element of interpretation from the team

leaders. The emotional category refers to nursing care needed to achieve or maintain equilibrium in relation to seven types of emotional problems and reactions. Each reaction or problem has an equal weighting of five.

The empirical range was found to be only 0 - 5, while the theoretical range is 0 - 35. A patient could possibly display all these reactions at one time. It was noted that the documentation of patient care requirements on the kardex was low and that the actual patient requirements could indeed be higher. If a notation was on the kardex regarding a patient's psycho-social requirement, it was documented in one of the subitems of the classification instrument, even though the terminology differed.

There was no kardex documentation in the obstetric service. Intensive care mean value was 1.11, surgical 0.16, pediatrics 0.66 and medical 1.03. Since the institution has an affiliation with a school of nursing in which psychosocial patient needs are stressed, one would expect more evidence of the identification of these patient care requirements in all clinical services.

The previous four categories, emotional, impairment, treatment and medical orders, and medications, were classified as non-routine technology by Hinshaw. These categories entail assessments and procedures which need to be analyzed on a logical basis, require a search process, and are less predictable. This investigator concurs with Hinshaw in this determination, however routine dimensions are also a component

in each of these categories. The delegation of the work to a subprofessional employee is less likely in these categories. If it is delegated, discretion would be used by the professional nurse and the coordination of any activities related to these categories would be accomplished through constant feedback (Hinshaw, 1975; Perrow, 1967; & Perrow, 1970).

Both routine and non-routine categories of the patient classification system involve the "care" and "cure process," the two systems in the total complex of patient care. When responding to patient care requirements in all categories of the patient classification system, the nurse functions within the authority structure of decision-making and supervision (Heydebrand, 1973 & Mauksch, 1966).

Six Additional Factors

Patient care requirements were noted in the first six subcategories of the patient classification instrument if documented on the kardex. The scores were not included in the total mean values of this study since Hinshaw did not report in these areas. These subcategories include: the admission or transfer of patient to/from the unit, emergencies existing with a patient, patients scheduled for surgery, a patient's first post-operative day, diagnostic testing in which the nurse participates, and the teaching of a patient and/or family.

Admissions were noted in 13 instances. This number is small, however not all admissions would necessarily coincide

with the data collection time. The admittance procedure is an important and time consuming process. It is important because it is the time when the nurse gathers subjective and objective data upon which to make a diagnosis and plan the nursing care based on the patient's care requirements. The admittance procedure is for fact-finding and requires the full utilization of the nursing process and time of the professional nurse. Admittance, transfer, and discharge procedures and processes compound patient care requirements.

Any acute crisis or emergency that requires a one to one nursing intervention adds to the complexity of the patient care situation. Although there were no such crisis noted during the data collection period such emergencies are likely to occur and are worthy of incorporating into the total patient care classification system.

Preparation of patients for surgery or care of patient during the first post-operative day were noted in the two pediatric units and four surgical units. There were 13 pre-surgical preparations documented while first post-operative day was noted in 18 instances. In the kardex documentation from unit to unit there is little consistency to signify these two areas of patient care. Meeting the psychological needs of patients and families during the first post-operative day can add to the complexity of a patient's requirements. The need for intravenous feeding and pain medication during the immediate postoperative period as well as new medical and treatment orders add to the complexity of care. This

post-operative category should be added to the treatment category and incorporated into the total mean requirements for a patient's care.

Diagnostic testing was representative of tests in which the nurse would participate by patient preparation, assistance to the physician, equipment preparation, or coordinating with another department, i.e., G.I. x-ray, lumbar puncture, bone marrow exam, glucose tolerance. Routine blood drawing was not included in the reported values. Medical and surgical mean requirements were comparable at 3.0 and 2.9, while pediatrics was the highest at 3.42. Diagnostic testing was lowest in obstetrics, 1.14 and intensive care had a mean value of 2.16. Since the institution is a teaching and research center to which patients often come for diagnosis, one would expect a good portion of a patients care requirements to be in the area of diagnostic testing. Nurses actively participate in the diagnostic process. Although diagnostic tests originate from the "cure process," the "care process" oversees, evaluates, coordinates the procedures, and monitors the patient closely for any possible complications following the test.

Teaching requirements were documented on 10 kardex notations; no family teaching was identified. The teaching pertained to diabetic patient care requirements and instruction in coughing and deep breathing. Since illness forces patients into unfamiliar hospital situations, patients are often faced with undue fear and anxiety. Assessing a

patient's learning needs and responding to the individualized situation can alleviate uncertainty and help the patient cope with physical, psychological, and social stresses. Although it has been shown by Meyers (1964) and Lindeman (1971) that the structured teaching approach is more effective than the unstructured, both methods occur in the hospital situation and both reduce the stressful events which patients face in the hospital. Nurses are continually teaching in the patient-nurse relationship, however, they are not documenting the practice. A portion of the kardex devoted to patient and family teaching notations might facilitate this process and remind staff of this important patient need. Teaching sub-categories in the classification system might include the method of teaching: structured, unstructured, individualized, family centered, or group teaching. The weightings could also reflect the content of the material taught, i.e., teaching the diabetic pathophysiology and care would be weighted heavier than an informal unstructured explanation of the admission procedure. Teaching is part of a patient's care requirements regardless of clinical service and needs to be a major component of the classification system (Kozier and DuGas, 1972 & Skipper and Leonard, 1965).

All of the six additional factors are worthy of incorporating into the patient classification system for the purpose of making the system more comprehensive. Restructuring and reweighting of the categories is needed. The addition of these factors would make the patient classification more

congruent with the work situation and with the responsibilities of nurses in the hospital organization. They are part of the total complex of patient care and contain both routine and non-routine technological aspects.

Interorganizational Findings

Total Mean Patient Care Requirements

The total mean values of patient care requirements in the five clinical services at the University of Oregon (UOHSC) and the University of Arizona (UAMC) are compared in table 5. These values do not include the vital signs category which was omitted because of rater error. Total mean patient care requirements were not tested for significance because raw score figures were not available to allow for the deletion of the vital signs category.

Mean figures of the University of Arizona are based on sample sizes which are 5 to 8 times those of the University of Oregon. The greatest difference in sample size was in the intensive care service where the University of Arizona data were based on 168 patient care documentations as compared to 22 of the University of Oregon. The intensive care service also showed the largest variation between mean patient care requirements, 14.62. Other differences between the mean requirements were: medical 3.41, surgical 7.16, pediatrics 2.99, and obstetrics 3.67. The surgical difference of 7.16

Table 5

Total Mean Value of Patient Care Requirements [a] per Clinical Service University of Oregon and University of Arizona

Clinical Service	University of Oregon	University of Arizona
Medical	22.59 (127) [b]	19.18 (586)
Surgical	27.01 (143)	19.86 (720)
Pediatric	27.27 (52)	24.28 (333)
Obstetric	14.95 (39)	18.66 (243)
Intensive Care	56.91 (22)	42.29 (168)

a. Mean Values minus the vital signs category.

b. Number in parenthesis indicates the total number of patients surveyed.

was based on a sample size of 143 from (UOHSC) compared to 720 from (UAMC). The large variations in sample size between the two institutions cannot be disregarded as contributing to the mean value differences.

The Z scores which were tabulated between category means will be discussed in the next section of this study. One observation is to be noted here regarding clinical services. Intensive care scores showed a statistically significant difference existed in all seven categories of the patient classification system.

In contrast, obstetrics had only one category in which the score was significantly different: treatment and medical orders. Once again intensive care and obstetrics are at the opposite ends of the continuum as far as complexity of patient care requirements is concerned. What was found to exist intraorganizationally has been found to also exist interorganizationally. The question regarding the reliability of the patient classification system is strengthened by this finding. The routine dimensions displayed in the obstetrical tasks apply once again. Few exceptions occur in this service. The use of subprofessional employee could be possible. In contrast the intensive care units at the University of Oregon Health Sciences Center with their highly significant patient care requirements, non-routine in nature, need ample knowledgeable professional nursing staff to satisfy patient care requirements in all categories of the patient classification system.

Comparison of Mean Patient Care Requirements by Category

The mean values of the routine patient care categories of activity, hygiene, and feeding between the two institutions are depicted in tables 6, 7, and 8. The Z scores in the activity category showed a significant difference existed between the University of Oregon and the University of Arizona in the medical, pediatric and intensive care services. The hygiene category was found to be significantly different in pediatrics and intensive care only. The University of Arizona had higher mean values for hygiene in the medical, surgical and obstetrics clinical services. Statistically significant differences in feeding scores were noted in the medical, surgical, and intensive care services of the (UOHSC). The pediatric mean score in the feeding category is considerably higher for Arizona with a negative Z score of - 10.01. Questions arise as to what might be contributing factors for these significantly different scores. Although no direct answer can be offered, it was noted that diagnosis and patient age were found to influence the patient care requirements intraorganizationally. Patient age and diagnosis could be the most likely variables contributing to significant differences interorganizationally as well.

The high mean patient care requirements of the medications category as shown in table 9 were reflected by highly significant Z scores in all clinical services of the UOHSC except in obstetrics. This non-routine category could require a greater number of professional nurses to satisfy these requirements.

Table 6

Mean Values of Patient Care Requirements in the Activity Category

Clinical Service	University of Oregon	University of Arizona
Medical	3.14 (127) [a]	2.18 (568)
Surgical	3.46 (143)	2.74 (720)
Pediatric	3.75 (52)	3.25 (333)
Obstetric	1.98 (39)	1.90 (243)
Intensive Care	6.44 (22)	4.16 (168)

a. Number in parenthesis indicates the number of patients surveyed.

Empirical range 1 - 13

Theoretical range 1 - 14

Table 7

Mean Values of Patient Care Requirements in the Hygiene Category

Clinical Service	University of Oregon	University of Arizona
Medical	2.69 (127) [a]	2.90 (568)
Surgical	2.54 (143)	3.10 (720)
Pediatric	4.59 (52)	3.70 (333)
Obstetric	1.4 (39)	2.07 (243)
Intensive Care	6.15 (22)	5.19 (168)

a. Number in parenthesis indicates the number of patients surveyed.

Empirical range 1 - 16

Theoretical range 1 - 16

Table 8

Mean Values of Patient Care Requirements in the Feeding Category

Clinical Service	University of Oregon	University of Arizona
Medical	1.61 (127) [a]	1.29 (568)
Surgical	2.26 (143)	1.71 (720)
Pediatric	2.58 (52)	4.22 (333)
Obstetric	1.05 (39)	1.00 (243)
Intensive Care	3.6 (22)	2.84 (168)

a. Number in parenthesis indicates the number of patients surveyed.

Empirical range 1 - 7

Theoretical range 1 - 10

Table 9

Mean Values of Patient Care Requirements in the Medications Category

Clinical Service	University of Oregon	University of Arizona
Medical	6.14 (127) [a]	5.34 (568)
Surgical	6.83 (143)	3.74 (720)
Pediatric	4.83 (52)	3.77 (333)
Obstetric	4.06 (39)	5.16 (243)
Intensive Care	11.30 (22)	8.58 (168)

a. Number in parenthesis indicates the number of patients surveyed.

Empirical range 0 - 16

Theoretical range 0 - 19

Mean values were significantly different in all clinical services of the UOHSC in the treatment and medical order category, see table 10. The highest Z score was noted in the surgical service and the lowest score was in obstetrics. Intensive care followed the surgical service, then pediatrics and medical. The high surgical mean value for Oregon was previously discussed as contingent on the many complicated surgeries performed. UOHSC has a cancer program approved by the College of Surgeons. UAMC has no such program. This could be a factor contributing to higher surgical scores which were significantly different from Arizona in all categories of the classification system except for activity and hygiene. Professional nursing intervention is needed to fulfill the significantly higher patient care requirements in the medical order and treatment category. These patient care requirements were found to exist in all clinical services.

The impairment category, table 11, was significantly different between the two hospital organizations in the surgical and intensive care services only. This category was not documented in obstetrics for the Oregon patients. The UAMC showed higher values in the medical and pediatric clinical services. This category denotes a patient's ability to communicate effectively and can entail states of consciousness, confusion, seizure activity and/or visual and hearing difficulties.

Differing from Hinshaw, this investigator did not consult with team leaders when recording emotional patient care

Table 10

Mean Values of Patient Care Requirements in the Treatment and Medical Orders Category

Clinical Service	University of Oregon	University of Arizona
Medical	6.94 (127) [a]	4.76 (568)
Surgical	10.16 (143)	5.06 (720)
Pediatric	10.39 (52)	6.42 (333)
Obstetric	6.46 (39)	3.97 (243)
Intensive Care	26.24 (22)	17.97 (168)

a. Number in parenthesis indicates the number of patients surveyed.

Empirical range 0 - 56

Theoretical range 0 - 61

Table 11

Mean Values of Patient Care Requirements in the Impairment Category

Clinical Service	University of Oregon	University of Arizona
Medical	0.48 (127) [a]	0.66 (568)
Surgical	1.16 (143)	0.84 (720)
Pediatric	0.47 (52)	0.73 (333)
Obstetric	0 (39)	0.40 (243)
Intensive Care	2.07 (22)	1.23 (168)

a. Number in parenthesis indicates the number of patients surveyed.

Empirical range 0 - 14

Theoretical range 0 - 26

requirements. However, examining table 12 reveals the difference in approach is not reflected in great differences in mean values. Although there was nothing documented on the kardex in obstetrics at the University of Oregon, all other clinical services showed significantly different scores from Arizona except pediatrics. The mean pediatric values were 0.66 and 0.60. Hinshaw related that this category required cautious interpretation. This investigator concurs based on two findings: (1) the terminology is highly subjective and incomplete, (2) kardex documentations on which the mean values were based were minimal.

The complexity of care in patients 65 years or older is not a likely factor to account for patient care requirement differences between the two institutions. Hinshaw related that at the time of data collection, 21.5% of the patients surveyed in the university hospital were 65 years or older. This study approximated the Arizona findings. At the time of data collection 21% of the patients surveyed were 65 years or older.

Many questions can be posed regarding the University of Oregon and the University of Arizona hospital organizations which could influence the findings in this study. Do the admission policies differ between the two hospital organizations? Is one institution more selective in the types of patient admitted for diagnosis and care? Does Arizona have a service responsibility for welfare patients as Oregon does?

Table 12

Mean Values of Patient Care Requirements in the Emotional Category

Clinical Service	University of Oregon	University of Arizona
Medical	1.03 (127) [a]	0.48 (568)
Surgical	0.61 (143)	0.41 (720)
Pediatric	0.66 (52)	0.60 (333)
Obstetric	0 (39)	1.09 (243)
Intensive Care	1.11 (22)	0.60 (168)

a. Number in parenthesis indicates the number of patients surveyed.

Empirical range 0 - 5

Theoretical range 0 - 35

Was the quality and amount of information documented by nurses on the kardex of substantial difference to influence the findings?

Generalizability of the findings of this study from these two teaching and research hospital organizations to hospitals of differing orientations should be made cautiously. Other variables to be considered when interpreting findings are: patients' ages, case mix, departmental specialization and types of services offered by the organization (Georgopoulos, 1972 & Heydebrand, 1973).

Comparison of Organizational Factors

Comparative data for the two university hospitals concerned in this study are shown in table 13. Both university hospitals are accredited by the Joint Commission on Accreditation of Hospitals, affiliated with medical schools, have residency and internship programs approved by the American Medical Association, and nursing schools accredited by the National League for Nursing.

Clinical and supportive services in the two hospitals are comparable in the major areas surveyed in this study. Both institutions have intensive care areas, conduct open-heart surgeries, have inpatient and outpatient renal dialysis units, and organ banks for transplant purposes. The areas of difference in services between the two hospitals do not have a direct bearing on the clinical services compared in this study. They are family planning, extended care units, burn

Table 13

Comparative Information for the University Hospitals
University of Arizona and University of Oregon

	Arizona	Oregon
Founded	1971	1956
Control	State	State
Service	Medical Surgical	Medical Surgical
Beds	235	528
Admissions [a]	7159	15,579
Census	147	388
Occupancy [b]	66.5%	71.2%
Newborn data		
Bassinettes	21	22
Births	837	1389
Personnel	1059	1422

[a] Number of patients accepted for inpatient service during a twelve month period; does not include newborn.

[b] The ratio of average daily census to average number of beds maintained during the twelve month reporting period.

care units, and rehabilitative inpatient and outpatient services (American Hospital Association, 1975).

The variables of age and size between the two institutions are the most likely factors to explain the large difference in the total mean patient care requirements between the major clinical services of the two hospitals. The University of Oregon has had a 15 year period of time during which the organization has been able to become more differentiated and specialized than the University of Arizona. Cardiopulmonary and vascular surgeries have multiplied since the 1960's, as well as kidney transplantation, gastrointestinal surgeries, neurosurgeries, otolaryngological and opthalmological surgeries. The cancer program approved by the College of Surgeons adds to the specialization of surgical procedures.

When one considers the variables of bed capacity, admissions per year, and employees, the University of Oregon is twice the organizational size of the University of Arizona. Functional specialization, departmental specialization, and professionalization are directly related to the organizational size of an institution (Heydebrand, 1973). Likewise, task complexity is directly related to organizational size (Georgopoulos, 1972). The factors of size and task complexity, and the greater number of admissions all contribute to the complexity of patient care requirements at the University of Oregon Hospital. The University of Arizona founded in 1971, has not had the opportunity to become as highly differentiated

care units, and rehabilitative inpatient and outpatient services (American Hospital Association, 1975).

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and specialized, resulting in lower total mean patient care requirements with a lower degree of task complexity.

The work of Berry and Hinshaw allowed for the interorganizational scope of this study. In addition to comparing mean patient care requirements, the classification system with its criteria can clearly identify specific patients with complex needs for student learning. The patient classification system could also provide information for the utilization of staff both intraorganizationally and interorganizationally, the allocation of beds and services between hospitals, and could give information about patient care requirements for community planning (Hinshaw, 1975 & Preston, 1964).

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

Patient classification systems are being used by nurses in hospitals to document the complexity of patient care requirements and plan the effective utilization of staff based on these care requirements. These systems have become more comprehensive through the joint efforts of nursing and engineering science.

This study was a partial replication of the Hinshaw study of 1975. The purpose of the study was to (1) identify patient care requirements at the University of Oregon Hospital founded in 1956 and (2) compare the mean patient care requirements in eight categories with those of the University of Arizona founded in 1971. Data were obtained from the patient care kardex and documented on the University of Arizona Patient Classification Instrument in five clinical services: medical, surgical, pediatric, obstetrics, and intensive care. The following eight categories were documented: activity, hygiene, feeding, medications, vital signs, treatment and medical orders, impairment, and the emotional category. The study differed from Hinshaw's in that the following six subcategories were also documented: admission/transfer, emergency, surgery, postoperative, diagnostic testing, and teaching.

There were two data collection periods. An F test revealed a significant difference between the first and second periods in the medical service only. This could be accounted for in the scores of the data collection instrument reflecting the patients care requirements. The classification system presented an expected pattern in care complexity. Mean patient care requirements were lower in the obstetrical service and higher in the intensive care areas. The medication and treatment and medical order categories of the classification system contributed to the high patient care requirements in the surgical and pediatric clinical services as a result of the complicated surgeries performed on patients in these services.

Mean patient care requirements were compared between the University of Oregon and the University of Arizona Hospitals in all categories of the instrument except the vital signs category. Vital signs was omitted because of rater error. Although the sample size of the University of Arizona was 5 to 8 times higher, the University of Oregon had significantly different mean patient care requirements in all clinical services except obstetrics. The University of Oregon showed significantly different scores in 14 out of 20 possibilities in the non-routine categories requiring professional nurses. The greatest total mean differences were in the intensive care and surgical clinical services. The variables of institutional age and size, and type of programs such as an oncology program increase the task complexity and mean patient care requirements in these services.

Conclusions

The age ranges and complexity categorizations of the hospitalized patient can be readily formulated from the patient classification system. Patient age and diagnosis influence the complexity of care. These data afford information which can help nurses when making decisions regarding the utilization of staff to satisfy patient care requirements. The patient classification system does not reflect all direct patient care requirements or any indirect patient care requirements. The system identified most major direct patient care requirements, however, many additional variables relating to patient care need quantification. Some variables can be quantified to make the system more comprehensive, while others escape this possibility. An area which escapes quantification is patient condition. The instrument does not have a built in mechanism to identify fluctuation in patient condition, a factor which could change a patients care requirements and the delegation of tasks associated with them. The nurses decision making process is needed in these instances rather than a static quantification. Another area which escapes quantification possibilities in patient classification systems is in the delegation of patient care activities. The variables to be considered in the process of staffing are: skill levels of personnel within the hospital unit, their competency to perform, stability and acuity of the patient's illness and the complexity of tasks to be

accomplished for the particular patient. These variables are qualitative in nature and require the professional nurses decision making process (Aydelotte, 1975 & Stevens, 1975).

All categories of the patient classification system have both routine and non-routine dimensions. The activity, hygiene, feeding, and vital signs categories involve procedures which have standard techniques in which few exceptions will occur, therefore they are the routine categories of the patient classification system. The non-routine categories are the medications, treatment and medical orders, impairment, and emotional categories. These categories involve patient care requirements in which many exceptions can occur, standard techniques are not as readily available, and an analysis is required. The delegation of tasks in any of these categories is dependent on the previously discussed qualitative variables. Most often the routine tasks can be delegated to subprofessional employees, while the non-routine tasks require the professionals knowledge and skill.

Age and organizational size are factors which can contribute to the degree of task complexity of a hospital organization (Heydebrand, 1973). This was shown to be the case in this study when comparing care requirements between the two institutions. The University of Oregon Hospital showed a greater degree of task complexity reflected in significantly different scores in 14 out of 20 of the non-routine categories of the patient classification system, thus a greater number of professional nurses are needed to satisfy these require-

ments. The patient classification system was found to be reliable interorganizationally.

Recommendations

Recommendations were made throughout the results and discussion chapter of this study to make the patient classification system more comprehensive according to category.

The diversification of nursing care activities in the hospital organization has resulted in a compounding of responsibilities from the "cure process" and hospital systems. Refinement of patient classification systems should therefore incorporate indirect patient care requirements along with the direct processes. These include such things as: planning and documenting a patient's care, conferencing, preparing shift reports, assisting physicians, coordinating care activities with other health team members, preparing staffing projection, assessing staff perfromance, and inservice education time. A quantification of these indirect care requirements would afford a more realistic approach to staffing needs, since these activities result from patient care requirements and require nursing discretion and time.

A nonspecified category which would allow for additional observations by the team leader or primary nurse could allow for more comprehension in the instrument (Ryan, et al, 1975). The evaluation for a patients needs would come from the

individual closest to the patient, and would afford an opportunity for emotional and psychosocial assessment. A recommendation for further immediate study would be to refine the current classification system to include indirect patient care requirements and individualized patient assessment as discussed. Refinement of the kardex care plan to coincide with the classification system would seem logical. Inservice education regarding the classification system and corresponding kardex format is recommended before implementation.

The next two recommendations deal with the criteria on which classification systems are based and are for long range projections. A classification system which has as its criteria the physiological and psychosocial needs of a patient assumes a "professional approach" as compared to the "technical process approach." Such a system would be comprehensive and individualized, and would be generalizable to all institutions. It would also be responsive to the changing conditions which occur in all patients. This approach gets to the core for the existence of a hospital and its staff, namely the patient and his individualized need. In order for this classification system to come about, a revolutionary approach would be necessary. Change would be directed toward a primary nursing approach with the limited use of auxiliary personnel. Record keeping and care planning methods would be a part of the envisioned change. For further information in this area, the reader is directed toward Kraegal et al., 1974, and Becknell and Smith, 1975.

Patient classification systems might be more effective if they followed outcome measures specific to a certain medical diagnosis and nursing intervention. Outcome criteria measure the change in a patient's health status while process criteria measure the process of care. The assumption is made when using process criteria that the interaction will have the effect predicted. Aydelotte (1975) recommends a study of the relationship between the action and the effect to see if the desired effect in fact occurred. "After an assessment of quality has been made, then the study of process will become important to ascertain what action produced the effect" (Aydelotte, 1975, p. 8). Since outcome criteria are in the process of being formulated, the recommendation is impossible at this time. In the interim nurses are still being asked to satisfy patient care requirements and staff units effectively and efficiently. Refinement and utilization of the present classification system with its process criteria is recommended. Knowing the strengths and limitations of the current systems is the first step in continuing the refinement process.

This study considered the variables of institutional age and size when comparing mean patient care requirements between two university hospitals. Other hospitals that could be studied in relation to patient care requirements might be non-teaching community hospitals, hospitals rendering specialized services or admitting patients with particular diagnoses. Although these studies are possible, this

investigator believes the classification instrument should be made more accurate and comprehensive before further researching of patient care requirements is done interorganizationally. It does not seem logical to test an instrument interorganizationally which is lacking in comprehensiveness and detail. The fact that interorganizational benefits are not known and there is a question as to possible cost in this approach also leads to this conclusion. The first priority would be to refine the present classification system and test it intraorganizationally.

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APPENDICES

APPENDIX A

Correspondence

May 20, 1976

Dr. Ada Sue Hinshaw
Associate Director of Nursing Research
University of Arizona
Tucson, Arizona 85730

Dear Dr. Hinshaw:

I am a graduate nursing student at the University of Oregon Health Sciences Center presently working with Dr. Mae Rawlinson in clinical investigation. I am very much interested in your study of Nursing Care Requirements in Six Different Hospitals and am considering a replication of the study at the University of Oregon Health Sciences Center. I am interested in the tool utilized and would very much appreciate a copy of the new patient classification tool and any other information you might deem helpful.

I thank you for this consideration.

Sincerely,

Mary Ann Riffel

Mary Ann Riffel
13325 N.W. Glenridge Drive
Portland, Oregon 97229

THE UNIVERSITY OF ARIZONA
ARIZONA MEDICAL CENTER
TUCSON, ARIZONA 85724

UNIVERSITY HOSPITAL

June 8, 1976

Ms. Mary Ann Riffel
13325 NW. Glenridge Drive
Portland, Oregon 97229

Dear Ms. Riffel:

I was delighted to receive your letter requesting information about the patient classification tool developed at the University of Arizona. It has taken several weeks to respond because I have been on vacation. I do apologize.

Dr. Rawlinson spoke of your research interests when we were in Seattle, for the WCHEN Research Conference. We'd be very interested in your repeating our nursing care requirements in another university hospital.

I am enclosing a copy of the old patient classification tool and its set of definition, a copy of the new tool with its definitions, and a copy of the instructions given in training the raters to use the tool. We always have the raters practice with 5 or 6 patients, mock kardexs, etc.

Please keep us informed on your progress and what your data shows. If we can help you further, please be sure to write or call.

Sincerely,

Ada Sue Hinshaw

DR. ADA SUE HINSHAW
Associate Director of Nursing for Research

ASH/mpg

Enclosure:

July 22, 1976

Dr. Ada Sue Hinshaw
Associate Director of Nursing for Research
University of Arizona Hospital
Tucson, Arizona 85730

Dear Dr. Hinshaw:

I am grateful for the classification tool and rater information you forwarded. My intention is to proceed with the replication of your study.

My concern at this time is for further information as to whether I need permission to utilize the instrument, and if so to whom I must write for approval.

The instrument would be utilized for research purposes at the University of Oregon Health Sciences Center.

Sincerely,

Mary Ann Riffel

Mary Ann Riffel
13325 N.W. Glenridge Drive
Portland, Oregon 97229

THE UNIVERSITY OF ARIZONA
ARIZONA MEDICAL CENTER
TUCSON, ARIZONA 85724

UNIVERSITY HOSPITAL

September 2, 1976

Ms. Mary Ann Riffel
13325 N. W. Glenridge Dr.
Portland, Oregon 97229

Dear Ms. Riffel:

It is our pleasure to grant you formal permission to utilize the University of Arizona Patient Classification Form and set of directions as copyrighted. We would be interested in receiving information concerning your results.

Sincerely,

Helen C Chance

HELEN C. CHANCE
Associate Hospital Administrator

Ada Sue Hinshaw

ADA SUE HINSHAW, PH. D.
Associate Director of Nursing for Research

ASH/mpg

c.c.: Joyce Verran
Associate Director of Nursing

July 29, 1976

Ms. June Satchfield
Assistant Director of Nursing Service
University of Oregon Health Sciences Center
Portland, Oregon

Dear Ms. Satchfield:

I am currently enrolled as a graduate nursing student at the University of Oregon Health Sciences Center. In fulfillment of the masters degree I would like to conduct a clinical investigation in six major clinical areas as discussed in the proposal I submitted to you.

I would like to survey the kardex on all units of South Hospital and the Obstetrical unit in North Hospital.

Patient care requirements will be documented from the kardex and if necessary in some instances I will need to consult with the team leaders.

I thank you for this consideration. My intention is to collect data on Tuesdays, Wednesdays, and Thursdays during the month of August.

Sincerely,

Mary Ann Riffel

Mary Ann Riffel
13325 N.W. Glenridge Drive
Portland, Oregon 97229

Area Code 503 225-8311

Portland, Oregon 97201

UNIVERSITY OF OREGON

HEALTH SCIENCES CENTER

August 6, 1976

Mary Ann Riffel
13325 N.W. Glenridge Drive
Portland, Oregon 97229

Dear Mary Ann:

Approval is given for your study. I am anxious for you to process your data. It may well turn out to be helpful in staffing the units.

I have notified all units per the schedule you gave me.

Sincerely,

June Satchfield

June Satchfield
Asst. Director of Nursing

JS:svl

December 24, 1976

Dr. Ada Sue Hinshaw
Associate Director of Nursing for Research
University of Arizona Hospital
Tucson, Arizona 85724

Dear Dr. Hinshaw:

My sincere appreciation for the figures you sent on December 15th. They were most helpful and I was able to run z scores on all the categories. This proved most helpful when discussing the results.

I do hope you have a very pleasant and prosperous 1977.

Sincerely,

Mary Ann Riffel

Mary Ann Riffel
R.N., B.S.

APPENDIX B

Johns Hopkins Patient Classification System and Criteria

JOHNS HOPKINS PATIENT CLASSIFICATION SYSTEM

Information:

DAY (1) FLOOR (2) UNIT (3) BED NO. (4,5,6) AGE: In Hos. (7,8) OR In Years (9,10)

EATER NO. (11,12,13)

DATE: _____

Directions: Use one form per patient classified. The numbers on the form are for computer use, please ignore them.

Check appropriate patient needs for nursing care. The criteria for assigning CLASS ratings are listed on a separate sheet marked JHPCS CRITERIA.

ACTIVITY

___Self ambulatory (14)
___Ambulatory with assistance (15)
___Up in Chair by self (14)
___Up in chair with assistance (16)

BATHING

___Self in bathroom (20)
___In B/R with assistance (21)
___Partial self bath @ bedside (21)
___Complete assistance (22)

___INCONTINENT (24)

FEEDING

___Self (26)
___Requires food cut (27)
___Complete Assistance (28)

___IV (32)

___SUCTION (40)

___DRAINAGE (41)

___DRESSINGS (42)

___ISOLATION (47)

___VISION INADEQUATE (48)

___UNCONSCIOUS (50)

EMOTIONAL DISTURBANCE

___Slight
___Marked (52-56)
___In Operating Room (59)
___In Recovery Room (60)
___65 years or older (65)
___Being Specialed of Necessity (66)

SEE JHPCS CRITERIA:
Check one

___Class I (67)
___Class II (69)
___Class III (71)

COMMENT:

Category I. Self-care

Any of the following combinations checked

(a) Ambulatory, or up in chair—Self (without assistance)
Feeding self, or requires food cut
Bathing in bathroom, or at bedside—Partial Self (can bathe self except for back and perhaps extremities)

(b) Ambulatory—with assistance
Up in chair—Self
Bathing in bathroom, or at bedside—Partial Self

(c) As in (a and b) with
Vision inadequate
Oxygen therapy
I.V. feeding
but no two of these factors simultaneously

Category II. Partial or intermediate care

Any of the following combinations checked

(a) Ambulatory—with assistance
Bathing in bathroom, or at bedside—Partial Self
Feeding—Complete Assistance (except I.V. feeding)
Vision inadequate } optional (does not affect classification under these conditions)
Oxygen therapy }

(b) Up in chair—Self
Bathing at bedside—Complete Assistance
Feeding Self, or requires food cut or I.V. feeding
Oxygen therapy } optional
Vision inadequate }

(c) As in (b) with the following changes
Up in chair—With Assistance
Bath at bedside

(d) Up in chair—With Assistance
Bath at bedside—Partial Self
Feeding—Complete Assistance
Vision inadequate } optional
Oxygen therapy }

(e) Bath at bedside
Feeding—Self, or requires food cut, or I.V. feeding
Vision inadequate } optional
Oxygen therapy }

(f) Being Specialed of Necessity (patient has continuous nursing assistance to the extent that meal relief must be provided for special duty nurse)

NOTE: Any patient who otherwise falls into Categories I or II, but who is under suction therapy or is in isolation, incontinent (including wound drainage necessitating change of bed linen), or markedly emotionally disturbed (needs almost constant observation, in single room, creates disturbance) will be dropped to the next category.

Category III. Intensive, or "total", care

All combinations not previously mentioned.

APPENDIX C

University of Arizona Classification System and Criteria

UNIVERSITY OF ARIZONA
ARIZONA MEDICAL CENTER
UNIVERSITY HOSPITAL

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UNIT _____

PATIENT CLASSIFICATION

DATE _____

PATIENT NAMES:

SHIFT	TOTAL RN HOURS	TOTAL LPN HOURS	TOTAL NA HOURS
7-3			
3-11			
11-7			
TOTAL HOURS			
TOTAL - SHIFTS & CATEGORIES			

	AGE	
	ADM/DIS/TRANSF	6
	EMERGENCY	9
	SURGERY	6
	POST-OP	7
	DIAGNOSTIC TEST	6
	TEACHING	6
ACTIVITY	SELF	1
	ASSISTANCE	3
	MECH. DEVICE	4
	CONFINED	8
	RESTRICTED	6
	HYPERACTIVE	6
HYGIENE	SELF	1
	ASSISTANCE	3
	COMP. ASSISTANCE	7
	CONFINED	9
	INCONTINENT	7
FEED	NPO	2
	SELF	1
	ASSISTANCE	4
	COMPLETE	7
MEDS	PO/INJ. qd - tid	2
	PO tid	4
	INJ tid	5
	IVS	6
	TOPICAL	4
VS	qd - tid	2
	tid	4
	CONSTANT	6
Rx and Mod ORDERS	OXYGEN	4
	RESP. THERAPY	7
	RESPIRATOR	9
	SUCTIONING	7
	GI/CHEST TUBE	6
	DRESSINGS/STOMA	4
	TRACTION	5
	RESTRAINTS	5
	OBSERVATION	7
	IRRIGATIONS	4
	SPECIMENS/I & O	3
IMPAIR	COMMUNICATIONS	4
	CONFUSED	7
	COMATOSE	8
	SEIZURE ACTIVITY	7
Emo PROBLEMS	MISTRUST	5
	HOSTILE	5
	GRIEF	5
	BODY IMAGE	5
	SUICIDAL	6
	ADDICTION	5
	WITHDRAWN	5
	TOTAL SCORE	
	CLASS	

UAS 2-41 (Rev. 1/74)

CH/
Is a new admission to hospital was or will be discharged today; was received from another unit that day or scheduled for transfer tomorrow.

NCY: Was involved in an acute medical crisis requiring 1:1 nurse-patient relationship for a period of time (i.e., cardiac arrest, active G.I. bleeding, suicide attempt, etc.).

Has had surgery today or scheduled for tomorrow.

First post operative day only, also post E.C.T. (Had surgery or E.C.T. yesterday).

TIC: Tests scheduled today or tomorrow requiring some degree of nurse assistance, i.e., medication, enema, assisting physician, accompanying patient. Does not include routine blood studies unless nurse must assist with collection, as with infant.

S: Patient or family requires special health teaching, i.e., new diabetic, dialysis, newborn care, new colostomy, etc.

(Check only one item above line +++++. "Hyperactive" may be marked in addition to another area).

Arises and walks without assistance. Needs no help in getting out of bed, chair, wheelchair.

CE: Requires some assistance in arising and walking. Needs help to get out of bed, chair, or to walk, i.e., someone to move his legs or splint an incisional area. (Is not completely dependent).

/ICE: Uses mechanical device for ambulation. Needs assistance to get into wheelchair, walker, or use crutches, but can propel the device himself.

D: Confined to bed or chair – does not move without assistance. May be comatose or unable to move and requires frequent turning and positioning. (Is completely dependent.)

ED: Restricted to bed because of medical order. Must remain in bed but would be physically able to get out, e.g., coronary patients, pediatric patients. (Dependent because of medical order only.)

+++++++

CTIVE: Hyperactive with much random behavior. Needs nursing control for his own safety or to keep him on the unit.

(Check only one area above line +++++. "Incontinent" may be marked in addition to another area).

Cares for self; initiates own personal hygiene.

ICE: Performs most care alone but needs assistance. Needs items brought to him but gives most of own personal hygiene. May require encouragement to care for self.

IST: Requires routine hygiene by nursing personnel. May be in traction or on bedrest. (Is physically able to move but hindered by medical order or therapy).

D: Requires frequent (more than daily) hygiene care, linen changes, etc. (Is physically not able to move).

+++++++

ENT: Is incontinent of either stool or urine. (Do not check this area when the incontinence is an expected physiological process, i.e., infants).

(Check one area only).

Feeds himself and requires no assistance other than having tray brought to bedside.

CE: Feeds himself but requires some assistance, i.e., needs meat cut, beverage poured, etc.

TE: Requires complete assistance. Nurse feeds patient completely, gives tube feeding, or her presence is required during meals, e.g., patient refuses to eat and needs encouragement.

ON (Include pro medications if given).

ID Oral or parenteral medications between once a day and once a shift. (Include IV medications given direct or piggyback).

D: Oral medications more frequently than once a shift.

D: Injections more frequently than once a shift. (Include IV meds given direct or piggyback).

Receiving IV fluids. (Include IV meds if injected via IV fluid bottle).

Any type of topical application of medication.

NS

Measurement between once and three times a day.

Measurement more frequently than 3 times in 24 hours.

T: Constant electronic monitoring (See "observation" below).

TREATMENTS & MEDICAL ORDERS:

(Check as many areas as appropriate).

OXYGEN: Oxygen prn or continuously by tent, mask or cannula.

RESPITHERAPY: One or more respiratory therapy treatments, e.g., IPPB, postural drainage, mist therapy.

RESPIRATOR: Any type of continuous ventilatory support.

SUCTIONING: Oral or tracheal suctioning more than once a shift.

DRAINAGE/ TUBES: Tubes connected to suction or gravity drainage, including urinary catheters, T. tubes, and drains.

DRESSINGS/ STOMA: Nurse changes the dressings or does stoma care. Patient had hot compresses.

TRACTION: Any type, or trapeze bar needed.

RESTRAINTS: Leather or cloth restraints necessary at some time.

IRRIGATION: Gastric, bladder, wound, stoma, eye, ear or throat irrigations; douche, enema.

SPEC/I&O: Sputum, stool, urine clinitest, (not blood) more than 3 times a day (Nurse actually collects specimen or her assistance is required during collections). Intake and Output requires nurse assistance.

OBSERVATION: Isolation, seclusion, or requiring continuous supervision, e.g., ICU patient; frequent vital signs; observation for own safety.

PHYSICAL OR MENTAL IMPAIRMENTS:

COMMUNICATION: Hard of hearing, deaf; visually impaired, blind, speech impaired; or has any kind of language difficulty which hinders communication.

CONFUSED: Requires frequent orientation to time and place, wanders or loses belongings.

COMATOSE: Semi-conscious or unconcious.

SEIZURE ACTIVITY: Patient having tremors, convulsing.

EMOTIONAL COMPONENTS:

(Include family support whenever nurse assistance is needed). On psychiatry service, multiply appropriate components by 2.

TRUST: Unable to trust others. Demanding, asks for frequent contact, frequent explanations or reassurance.

HOSTILITY: Hostile, aggressive, negativistic behavior.

GRIEF: Active grief work, separation anxiety, fear or imminent death.

BODY IMAGE: Disturbance of body image-amputation, possible appearance change due to medical or drug therapy or believes has a disturbance of body image.

WITHDRAWN: Withdrawn or depressed. Patient requires support, counseling and continual interaction.

SUICIDAL: Actively suicidal or homicidal.

ADDICTED: To alcohol or drugs.

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Form DHH 5-107
Nursing Department
Arizona Medical Center
University of Arizona

APPENDIX D

Example of Data Collection Instruments

UNIVERSITY OF ARIZONA
ARIZONA MEDICAL CENTER
UNIVERSITY HOSPITAL

72% UNIT 7A - Surgical

PATIENT CLASSIFICATION

DATE 7-1-76 - 1 P.M
26 Beds (19)

SHIFT	TOTAL RN HOURS	TOTAL LPN HOURS	TOTAL NA HOURS
7-3			
3-11			
11-7			
TOTAL HOURS			
TOTAL SHIFTS & CATEGORIES			

			PATIENT NAMES: 3-1	2	7-1	2	11-1
	AGE		20	32	80	59	62
	ADM/DISCHARGE	6					
	EMERGENCY	3					
	SURGERY	6					
	POST-OP (2.8) 14	7		7		7	
	DIAGNOSTIC TEST (1.2) 6	6	6				
	TEACHING	6					
ACTIVITY	SELF 2	1	1				1
	ASSISTANCE 3	3			3		
	MECH. DEVICE (4.2)	4					
	CONFINED 16	8		8		8	
	RESTRICTED	6					
	HYPERACTIVE	6					
HYGIENE	SELF 1	1	1				
	ASSISTANCE (5.0) 3	3					3
	COMP. ASSISTANCE 14	7		7		7	
	CONFINED	9					
	INCONTINENT 7	7			7		
FEED	NPO	2					
	SELF (2.8) 3	1		1		1	1
	ASSISTANCE 4	4			4		
	COMPLETE 7	7	7				
MEDS	PO/INJ od - tid	2					
	PO tid	4					
	INJ tid	5					
	IVS	6					
	TOPICAL	4					
VS	od - tid	2					
	tid	4					
	CONSTANT	6					
Rx and Mod ORDERS	OXYGEN	4					
	RESP. THERAPY	7					
	RESPIRATOR	9					
	SUCTIONING	7					
	CHEST TUBE	6					
	DRESSINGS/STOMA	4					
	TRACTION	5					
	RESTRAINTS	5					
	OBSERVATION	7					
	IRRIGATIONS	4					
	SPECIMEN I & O	3					
IMPAIR	COMMUNICATIONS	4					
	CONFUSED	7					
	COMATOSE	8					
	SEIZURE ACTIVITY	7					
Emot PRODLEMS	FRIGHT	5					
	HOSTILE	5					
	GRIEF	5					
	BODY IMAGE	5					
	SUICIDAL	5					
	ADDICTION	5					
	WITHDRAWN	5					
	TOTAL SCORE						
	CLASS						

DHE 6481 (Rev 3/74)

Patient Care Kardex

Date	Situation	Nursing Approach
Discharge Plans:		
Team Conference:		

DIET:

Feeds Self:

FLUIDS:
Restricted to _____ 24 hrs.
Trays _____
7- 3 _____
3-11 _____
11- 7 _____

Intake:

Output:

R.C.

ACTIVITY	PERSONAL HYGIENE		MISC.
Bedrest:	Bed Bath:	Dentures:	
Chair:	Shower:	Oral care:	
Ambulate:	Tub Bath:	Face shave:	
BRP:	Partial:	Shampoo:	
Position:	Perineal care:	Prosthesis:	
Ad Lib:	Skin care:		

Urine Reductions:

Weight:

Stools:

Enemas:

Infection Report:

Isolation:

Adm. Wt. Ht. B.P.

Religion: In emergency call:

Name: Age: Unit No.: Service: Adm.:

Medication Kardex

Name
Admission:
Religion:

Diagnosis:
Surgery & Date:

ALLERGIES

Date	MEDICATION	Hour	Hour	DC	Date	MEDICATION	Hour	Hour	DC
						P.R.N.			

MS-1702-MH-4/69

AN ABSTRACT OF THE CLINICAL INVESTIGATION OF

MARY ANN RIFFEL

for the Master of Nursing

Date of receiving this degree: June 11, 1977

Title: IDENTIFICATION OF PATIENT CARE REQUIREMENTS IN A UNIVERSITY HOSPITAL

Approved: [redacted]
(Professor in Charge
of Clinical Investigation)

Patient classification systems are being used by nurses in hospitals to document the complexity of patient care requirements and plan the effective utilization of staff based on these care requirements. These systems have become more comprehensive through the joint efforts of nursing and engineering science.

This study was a partial replication of the Hinshaw study of 1975. The purpose of the study was to (1) identify patient care requirements at the University of Oregon Hospital founded in 1956 and (2) compare the mean patient care requirements in eight categories with those of the University of Arizona founded in 1971. Data were obtained from the patient care kardex and documented on the University of Arizona Patient

Classification Instrument in five clinical services: medical, surgical pediatric, obstetrics, and intensive care. The following eight categories were documented: activity, hygiene, feeding, medications, vital signs, treatment and medical orders, impairment, and the emotional category. The study differed from Hinshaw's in that the following six subcategories were also documented: admission/transfer, emergency, surgery, post-operative, diagnostic testing, and teaching. There were two data collection periods. An F test revealed a significant difference between the first and second periods in the medical service only. This could be accounted for in the scores of the data collection instrument reflecting the patients care requirements. The classification system presented an expected pattern in care complexity. Mean patient care requirements were lower in the obstetrical service and higher in the intensive care areas. The medication and treatment and medical order categories of the classification system contributed to the high patient care requirements in the surgical and pediatric clinical services as a result of the complicated surgeries performed on patients in these services. Intraorganizational conclusions reached as a result of this study were: (1) patient care requirements can be reliably identified with the patient classification instrument except in the vital signs and emotional categories, (2) age and patient diagnosis is a variable affecting patient care requirements and complexity of care, (3) complexity of care can be calculated from the patient classification instrument to aid

in making staffing decisions, (4) although the activity, feeding, hygiene, and vital signs categories can be classified as routine technology, and medications, treatment and medical orders, impairment and emotional categories can be considered routine technology, there is an overlapping component of both dimensions in each category, (5) variables such as change in patient condition or level of staff expertise for the delegation of duties are more difficult to quantify. These require the professional nurse's immediate decision-making and consequent intervention, (6) a nonspecified category in the patient classification system would allow for additional observations by the nurse to identify individualized patient care requirements, making the classification system more comprehensive, (7) the inclusion of indirect patient care requirements such as record keeping or conferencing with staff into the system would make the instrument more fully congruent to the nurses' work situation, (8) since outcome criteria have not been tested, it is necessary to use the process approach as used in this study.

Mean patient care requirements were compared between the University of Oregon and the University of Arizona Hospitals in all categories of the instrument except the vital signs category. Vital signs was omitted because of rater error. Although the sample size of the University of Arizona was 5 to 8 times higher, the University of Oregon had significantly different mean patient care requirements in all clinical services except obstetrics. The University of Oregon showed significantly

different scores in 14 out of 20 possibilities in the non-routine categories requiring professional nurses. The greatest total mean differences were in the intensive care and surgical clinical services. The variables of institutional age and size, and types of programs such as an oncology program increase the task complexity and mean patient care requirements in these services.

Some interorganizational conclusions reached as a result of this study were: (1) a patient classification system can be used to compare patient care requirements between hospital organizations, (2) the literature does show that institutional age and size have a bearing on the degree of task complexity. This was reflected in the comparison of the mean patient care requirements between the UOHSC and the UAMC. (3) Since the instrument is presently used to weigh the complexity of care and staff units accordingly, the development of a more comprehensive instrument takes precedence at this time over interorganizational study.

Recommendations were made for immediate and long-range study.