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A literature-based lexicon and taxonomy of key nursing administration terminology

Heyden, Richard Frankie, Ph.D.

The University of Texas at Austin, 1992

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A LITERATURE-BASED LEXICON AND TAXONOMY OF KEY

NURSING ADMINISTRATION TERMINOLOGY

by

RICHARD FRANKIE HEYDEN, RN, MM

DISSERTATION

Presented to the Faculty of the Graduate School of

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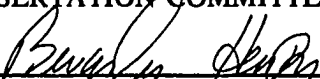of the Requirements

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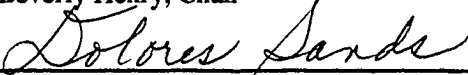DOCTOR OF PHILOSOPHY

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May 1992

A LITERATURE-BASED LEXICON AND TAXONOMY OF KEY NURSING ADMINISTRATION TERMINOLOGY

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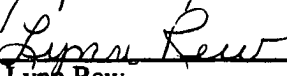
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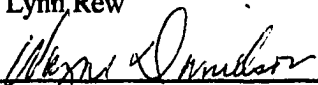Beverly Henry, Chair

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1992

DEDICATION

Affectionately dedicated to my wife, Karen, and my two children, Lisa and
Douglas. Without their support and patience this work would have impossible.

ACKNOWLEDGMENTS

Zgusta describes the work of lexicography through the words of the 16th century lexicographer, J. J. Scaliger "who says in fine Latin verses that the worst criminals should neither be executed nor sentenced to forced labour, but should be condemned to compile dictionaries, because all the tortures are included in this work" (p. 16).

In spite of Zgusta's insightful illustration of the difficult and exacting work of lexicography, there are many individuals that made this project possible and enjoyable. Much thanks and appreciation is given to those who provided their expertise. Most valuable was my chairperson, Dr. Beverly Henry. She is a wonderful example of a mentor who is unselfish with her time and energy. Her constant encouragement and valuable expertise were indispensable for this project. Dean Sands' research experience and insight were especially helpful in limiting the study to a manageable size. Dr. Susan Grobe's high standards and thorough understanding of research methodologies were invaluable. Insight into theory development was provided by Dr. Lynn Rew. Dr. Wayne Danielson's assistance in designing the methodology and developing the computer programs was crucial to the success of the study. Dr. William Koch's keen insight into numerous details as well as the interpretation of statistical data was highly valued.

Others who provided valuable assistance include Ruth Anderson, Corinne Birdwell, Tressa Cathcart-Siberberg, Patricia Castiglia, Helen Castillo, Michael Evans, Jayne O'Donnel, Patsy Parker, Betty Scaggs, Evonne Taylor, Diane Torkelson, and Stephanie Woods.

Of special mention must be Dr. Maryann Fralic, Senior Vice President of Nursing, Robert Woods Johnson University Hospital. She chaired the AONE Blue Ribbon Committee that identified the development of a taxonomy of nursing administration terms as priority and provided continual encouragement as the study developed.

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A LITERATURE-BASED LEXICON AND TAXONOMY OF KEY NURSING ADMINISTRATION TERMINOLOGY

Nursing administration is concerned with the organization, production, distribution, and evaluation of nursing services for individuals and communities, and the practitioners and organizational units responsible for those services. The extent to which nurse administrators can perform efficiently is related to the existence of a common terminology or lexicon and taxonomy of their domain. The need for a common terminology has been recognized in nursing administration but systematic efforts to examine the terms in the domain have not been undertaken.

The purpose of this study was to identify and define key terms in the nursing administration lexicon and use those terms to delineate a taxonomic structure from the published literature in nursing administration. The research questions were:

1. What are the key domain terms in the lexicon of nursing administration as found in the literature?

2. What are the definitions of the terms?

3. What taxonomic structure best represents the relationships of terms in the nursing administration lexicon?

The population was the terminology in published nursing administration journal articles. The study sample was 284 randomly selected articles published from 1985 to 1990 meeting pre-specified criteria for inclusion and found in Nursing Management, Journal of Nursing Administration, Nursing Economics, or Nursing Administration Quarterly.

This descriptive study used lexicographic and taxonomic techniques. Articles were electronically scanned, converted to ASCII files, and formatted to assist in selecting key domain terms and developing context-based definitions. A panel of seven experts, using pre-specified criteria, identified eighty-five key terms from a term frequency list. Context-based definitions were developed for each key term using Key-Word-In-Context listings. Coefficients of dissimilarity were developed using paired comparisons of term association profiles and then analyzed with cluster analysis techniques to create a five cluster hierarchical taxonomy.

This study was a first step in describing the lexicon and taxonomy of terms in nursing administration. Practitioners will benefit from a more clearly delineated understanding of the terms in use. The findings can also provide a basis for the future development of theoretical knowledge and research.

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CHAPTER 1

STUDY INTRODUCTION

Introduction

Nursing administration is concerned with the organization, production, distribution, and evaluation of nursing and health care services for individuals and communities, and the practitioners and organizational units responsible for the services. Emphasis is on providing quality care that is economical, efficient, and equitably distributed. Nursing, health, and disease are central concepts in designing and maintaining health care delivery systems. The organization of care involves planning for personnel and the services to be offered and designing organizational structures that will enable the efficient production of services for individuals and communities. Producing cost-effective services involves acquiring and managing the financial, human, and technological resources needed to implement organizational plans. Evaluation involves examining the practitioners and organizational units involved. Nursing personnel are of utmost interest to nurse administrators who manage complex systems in which effective communication is of vital importance.

However, the extent to which nurse administrators can communicate efficiently and coordinate and improve nursing practice is related to the existence of a common terminology or lexicon and taxonomy of their domain. In 1976, Blair emphasized the need for nurse administrators to use terms in common but efforts to systematically analyze the terms in use have been largely missing. The

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kind of terms, the size of the nursing administration vocabulary, and the meanings

of the terms have not been systematically examined. Yet nurse administrators are

expected to communicate effectively with one another and with many providers

and consumers in their efforts to manage the activities of a large number of people

in a variety of roles and with many different levels of education.

General Problem

Nurse administrators rely on terminology from nursing and other

disciplines to generate, clarify, and share concepts because they cannot

communicate and coordinate the delivery of health care in isolation from others.

Individual efforts are enhanced through sharing an understanding of terms and

comprehending the basic relationships among the terms.

There are more than 10,000 hospitals and long-term care facilities in the

United States. In these, nurse administrators at the first, middle, and executive

levels are responsible for the organization, production, equitable distribution, and

evaluation of people, services, and cost. Although there are at least 65 nursing

administration graduate programs in which the focus is on advancing both the

practice and knowledge of nursing administration, there have been few efforts to

identify, define, and classify nursing administration's terminology. Consequently,

the terms in nursing administration are sometimes used inconsistently. Little

differentiation is made in the meaning of terms shared with other disciplines and

conceptual relationships among terms are oftentimes unclear. Blake and

Haroldsen (1975) comment, "In the absence of taxonomic precision, one may

often hide behind terminological confusions . . . safe from the demands for clarity

or parsimony, because nobody really knows what he is talking about" (p. xv). The complexity and the wide variety of professional functions for which nurse administrators are responsible make taxonomic studies useful since a taxonomy helps bring order and clarity to complex fields (Hambrick, 1984). The American Organization of Nurse Executives (AONE) recognized the need and identified, as one of its six research priorities, establishing a commonly accepted and understood taxonomy of nursing administration terminology (Fralic, 1986).

Furthermore, knowledge development is influenced by the clarity of a discipline's lexicon and taxonomy. McKelvey (1982) and Nagel (1961) stated, historically, progress in a field has been slow when an acknowledged taxonomy is absent. When a clearly delineated lexicon and taxonomy are missing, participants in a field have difficulty applying and communicating information (Fleishman & Quaintance, 1984).

<div align="center">Study Purpose and Aims</div>

In view of the importance of understanding a shared terminology, the purpose of this study was to develop a beginning lexicon and taxonomy of key terms in nursing administration. The specific aims were:

1. To identify key terms of the nursing administration lexicon as published in its literature.

2. To formulate context-sensitive definitions of key terms.

3. To develop a taxonomy showing the relationships of key terms.

The development of a lexicon require two levels of study. The micro level, which is the description or definition of individual terms, and the macro level,

which consists of the delineation of the overall structure or taxonomy. Delineation of a lexicon and a taxonomic structure are the alpha and beta phases in which terms are identified and defined, and patterns of association are discerned (Mayr, 1969).

Research Questions

The research questions were:

1. What are the key domain terms in the lexicon of nursing administration as found in the literature?

2. What are the definitions of the terms?

3. What taxonomic structure best represents the relationships of terms in the nursing administration lexicon?

Definitions

The key terms in the research questions have been defined in conceptual and operational terms.

Key domain terms were single or multi-word units determined as important to nursing administration by virtue of their frequency of occurrence and their connection with nursing administration concerns.

Key terms were operationalized as the most frequently used domain terms in the total textual resources used for the study. Degree of importance related to the frequency of each term's use, with the highest frequency terms considered the most important. Domain term was operationalized as nouns or noun phrases judged by a panel of experts to have special meaning or importance to

nurse administrators as reflected in the definition of nursing

administration, the frame of reference used for the study.

Lexicon was the collection of terms and their definitions from the

literature which met the criteria of key domain terms. The term definitions have

been derived from the context in which the terms are located. Context is

operationalized as all other words in the sentence in which a key term is located.

The context is delimited by the beginning and end of the sentence in which a term

is located and provides information about its meaning. The collection of all

sentences containing a term are a Key-Word-In-Context (KWIC) listing. The

collection of all KWIC listings comprise the citation file.

Nursing Administration is the organization, production, distribution and

evaluation of quality nursing care with attention to economy, efficiency, and

equity for individuals and communities. Nursing, health, and disease are central

to the delivery of quality nursing care services.

Organization involves planning for personnel and the services to be

offered based on needs assessment, and designing the organizational structure that

will produce, distribute, and evaluate the services. Production is acquiring and

managing financial, human, and technological resources to efficiently implement

the organization and plan for cost-effective patient services. Distribution is the

apportionment and dispersal of health and nursing care to individuals and

communities. Evaluation includes assessing the health care needs of individuals

and groups in the community served and appraisals of nursing care, nursing

personnel, organizational units, programs, total nursing organization, and health

care outcomes.

<u>Literature</u> was articles from nursing administration journals with content addressing the concerns associated with the management of nursing services. The literature was operationalized as the narrative portion of 284 randomly selected full length articles that address the concerns of nursing administration. The publications used in this study included the volumes for six years from the most widely circulated journals in the field including <u>Nursing Management</u>, <u>Journal of Nursing Administration</u>, <u>Nursing Economics</u>, and <u>Nursing Administration Quarterly</u>. The narrative portion was the complete sentences constituting the text of the article and excluding terms in tables, graphs, and figures.

<u>Definitions</u> were descriptions of the meaning of each key term. Definitions were operationalized using the following rules.

1. Each definition contains a description of each entry term, usually from one to eight sentences.

2. Neither the entry term nor any derivation will be contained in its definition thus avoiding circularity.

3. Other terms occurring in a term's definition that are not included in a separate entry and are not generally understood are cross referenced with other dictionaries.

4. Each term's definition is a positive statement indicating what the term means.

<u>Taxonomic structure</u> was an organization of terms showing conceptual relationships. A taxonomy illustrates relationships and hierarchies of a terminology and is developed by organizing information into groups and patterns based on their shared characteristics. Operationally, information about the

relationships between terms was based on a composite of the Euclidean distances

derived from paired comparisons of the terms' characteristics. A composite of

Euclidean distances is the algorithm used in cluster analysis to interpret

dissimilarity coefficients in a hierarchical dimension. The characteristic of each

term was its association profile. An association profile was a list of 21 frequently

occurring indicator terms and their relative frequency associated with each key

term. The unit of analysis for developing association profiles was a sentence

(Soergel, 1974). The key indicator terms represented different dimensions of the

field and provided data for paired comparisons. A normalization formula

converted the comparison data into coefficients of dissimilarity.

Significance of Study

Development of a lexicon and taxonomy is foundational for nursing

administration and has potential value for other text-based taxonomic studies.

The text-based approach, accessing readily available data, is economical,

efficient, and unobtrusive inasmuch as subject reactivity and instrumentation

errors are minimized (Krippendorf, 1980). The development of a controlled

vocabulary is of value for future nursing administration studies of an indexing or

taxonomic nature.

A clearly delineated lexicon and taxonomy can assist nurse administrators

to coordinate and improve practice through more precise communication and

mutual understanding of the relationships of the terms in print. Moreover,

expressive clarity and consistent use of terms may increase scientific progress in

the field by assisting practitioners in clarifying complex ideas and communicating

precisely. Through the study, core concepts of nursing administration are more clearly defined, enabling practitioners to understand the similarities and differences between nursing administration and other professional service disciplines.

This study is of potential value not only to practitioners but also to educators and theorists. Educators can use the beginning taxonomy when designing curricula to organize and integrate content. Currently there are many unexplained approaches to the organization and integration of knowledge from nursing and management (Henry, 1989). Theorists will be able to describe phenomena using terms that nurse administrators understand to develop theory analysis, synthesis, and derivation. Concepts are core elements in theories. The lack of delineated meanings and relationships of terms in the domain partially explains the dearth of nursing administration theories and research that tests theoretical frameworks.

Assumptions

The assumptions on which the study was based are as follows:

1. The most frequently used terms in nursing's literature are generally the most important.

2. The nursing administration literature is a reasonable representation of important terms in the practice of nursing administration.

3. Lexicons consist of terms and definitions and the context of a term provides information that is useful in the development of its definition.

4. The relationships among terms are not readily apparent and require special techniques to reveal.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This chapter begins with a description and definition of nursing

administration derived from the literature. The description addresses the

functions and central concerns in nursing administration. Next, lexicons and

lexicographic methodologies are discussed. Lexical studies of terminology,

traditions in the development of term definitions, and classical works on

lexicography are presented. Two lexicons in health care administration are

described and examined. Taxonomies and taxonomic methodologies are

reviewed along with nursing and management taxonomies. The frame of

reference for the study concludes the chapter.

Nursing Administration

Nursing administration is defined and described from the perspective of

who performs the role and what the functions of the role are. In the majority of

U.S. health care institutions, nurses manage the care provided to individual

patients and communities as first-line managers, as coordinators of a number of

organizational units, and as executive chiefs of a service. Nurses in senior

administrative positions may also be accountable for other units, especially in

large hospitals, including pharmacy and social work. In some corporations they

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have authority for the care provided in all the corporate holdings (Simms, Price, & Ervin, 1985).

According to Alexander (1987) a nurse with the authority for patient care administers a complex system of personnel, consumers, and technology. Strong communication skills are essential for effective functioning. Those in the highest executive positions are academically prepared to communicate effectively with patients, nurses, physicians, other managers, and members of the board. They are expected to have, at a minimum, a masters degree, and a doctorate is preferred. The American Nurses' Association (ANA) (1988) recommends that nurse administrators have undergraduate education in nursing and a graduate degree from a program that includes nursing and management science. The number of dual degree programs are increasing in which both a master of business administration and a master of nursing are earned because of the heavy demands in the role (Mark, Turner, & Englebardt, 1990).

Nurse Administrator Functions

The four functions -- organization, production, distribution, and evaluation -- provide the framework for the description of nursing administration which follows. These derive from Mechanic's (1978) discussion of health services administration and Frederickson and Henry's (in press) definition of nursing administration. Discussions of nursing, health, and disease and equity, efficiency and economy are integrated throughout these descriptions. A separate section is devoted to nursing personnel.

Organization.

Organization of nursing involves assessing the health care problems and needs of individuals and groups, planning for personnel and the services to be offered, and designing organizational structures that will produce, distribute, and evaluate the results of the services. A goal in nursing administration is to design delivery systems with the health care needs of the population as the basis using social indicators and need analyses.

Information about individuals and communities is then conveyed to the governing body as a whole to determine the mission, objectives, and structure of the organization. According to Schultz and Magilvy (1988) decisions about which services to offer are based on the health and diseases in the community, the resources available, the mission and goals of the institution, and the costs and benefits. Whether needs are determined by epidemiological assessments or inferred from other indicators, meeting community need is influenced by the value placed on service and profit. The allocation of resources depends on the values of nurse, hospital, and medical administrators, the resources available, and the expectations of the people served. Costs and benefits are measured in economic, public relations, and mission terms. A service may not be economic or profitable, but if it contributes to the social equity and is highly valued for its public relations benefit, it will be maintained (Silva, 1990).

Planning for nursing services is based on understanding the phases of care delivery. Strategic and tactical planning for the short-, medium-, and long-range is done to ensure effectiveness and equitable distribution (Anderson, 1990). Among the more common planning activities in nursing administration are brainstorming

and using nominal groups, the Delphi technique, and market analysis. When planning, nurse administrators also develop policies for personnel and practice based on government regulations, professional standards, and community norms and precedents.

Organizational structures are the designs of institutions with consideration given to type, affiliation, and location. Nurse administrators work in many types of organizations and thus encounter a variety of challenges in managing efficient, economic, and equitable services (Frederickson & Henry, in press). The types of organizational units vary by health problems, the time parameters of services, financial structure, and ownership. Examples include children's hospitals, minor emergency centers, home health care agencies, nursing homes, and psychiatric facilities. Moreover, health care institutions are designated, for taxation, as for-profit or non-profit and ownership is usually designated as government, corporate, or private. Type of ownership also infers different political, financial, and professional problems (Cleverly, 1986). For example, institutions may be affiliated with religious denominations or secular groups as well as with corporate or private sponsors that establish endowments and programs of donation. Other affiliations are with research and education institutions including schools of medicine and nursing (Herzlinger, 1984).

The location of organizations is designated as rural or urban. Rural institutions tend to be smaller than the urban and contain fewer specialized care units. As Churchill (1987) noted, the economic environment in urban and rural communities affects the quality and cost of care and the number and type of clients. Clients who postpone obtaining needed services eventually require more

intensive and specialized health care; thus nurse administrators may find fewer but sicker patients for some populations and in some localities, especially for organizations serving the poor.

Organization also pertains to the way nursing personnel are assigned to provide services. Practitioners are organized by level of authority into centralized or decentralized organizational structures in which each position is described by title, qualifications, and responsibilities. The organizational structure and span of control determines the authority and accountability relationships as well as the functions, reporting relationships, and communication networks (Barnum & Mallard, 1989).

According to Stevens (1978) nurse administrators are typically responsible for half the personnel in hospitals. Job titles of people in the nursing organization includes infection control coordinator, quality assurance specialist, director of medical and surgical services, director of training, coordinator for hospital discharge planning, and clinical nurse specialist. The type of organizational structure is influenced by the skills, number, and cost of available personnel, the complexity of patients' diseases and health care problems, and management values. With respect to the latter, some nurse administrators prefer highly centralized bureaucratic structures and others the decentralized, participative, and democratic (Dienemann, 1990).

Assignment structures for care at the unit level include case, functional, team, and primary nursing (Tappen, 1989). In case nursing, one nurse is assigned to the total care of one or more patients on a shift-by-shift basis. In functional structures, nurses are assigned to specialized tasks. In team nursing, a small

group of RNs and nursing auxiliary personnel are assigned to a number of patients and provide total care with the RN delegating tasks to the auxiliary team members. In primary nursing, a nurse is assigned to a patient for his or her entire hospital stay. Nurse administrators in public health and home health agencies generally use the primary assignment method. In hospitals, all four are used depending on personnel, technology, and case mix. New organizational designs based on differentiated practice and involving delegation to non-professionals are also being developed. Efforts to make the transition from episodic care to managed, integrated care with preventive, and cross-institutional components are underway. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requires that the organization and allocation of nurses be determined by using a patient acuity system reflecting patients' nursing needs. Patient acuity or classification systems are based on the anticipated required time to deliver care, the complexity of the required care, or the degree of a patient's dependency.

Barnum and Mallard (1989) note that the ability in nursing administration to effectively and efficiently deliver services is dependent on support systems and the coordination provided by committee structures. The types, authority, and personnel mix of committees reflect the value in an organization placed on participation by various personnel. The departments providing support to the nursing organization include dietary, central supply, laboratory, radiology, pharmacy, and engineering. A key nursing administration function is coordinating the services provided by the personnel in these departments.

Production.

Production is acquiring and managing financial, human, and technological resources to efficiently implement the organization and plan for cost-effective patient services. The financial operations for which nurse administrators are responsible include forecasting, budgeting, managing budgets, protecting assets, and auditing (Fralic, 1988). Forecast planning is determining the anticipated amount and type of costs and benefits for varying personnel and case mixes from a course of action. Consideration in forecast planning is given to government reimbursement policies, epidemiologic, economic, and technologic trends; the public's attitudes, and to such internal considerations as sufficiency of capital, equipment, and personnel.

Budgeting is the process of planning allocations based on forecast planning. The relative unpredictability of external and internal factors makes managing budgets difficult and supplementary budgets commonplace (Mark & Smith, 1987). Carefully formulated policies and budgets maximize reimbursement for the nursing services from Medicare and third-party payors. Sufficient liability insurance coupled with an active risk management program limits losses due to expensive litigation. Auditing of all major activities improves productivity and ensures the efficient use of budgeted funds (Shortell, Morrison, & Friedman, 1990).

Nurse administrators improve productivity by ensuring consistent, fair practices, appropriate benefits, adequate protection, and a timely sensitivity to changing expectations and needs (Stevens, 1985). Systematic training programs are also provided to enhance the skills of nursing personnel. Health care

knowledge is highly specialized and rapidly changing. Therefore a vigorous program of in-service education is essential to ensure the highest quality of care with the resources available. Training nurses to function in complex organizations is a major challenge in nursing administration. Knowledge is needed about advances in clinical care, communication, and information management (Grobe, 1988a).

Productivity and morale are affected by nurses' perception of the fairness of administrative actions. Successful nurse administrators work for equity in personnel administration. Benefits enable personnel to remain productive in spite of illness and pregnancy. Protection and safety are both ethical and productivity concerns. Personnel must be protected from disease, physical harm and harassment (Gawthrop, 1984).

Effective communication is also critical for productivity. Computers are indispensable in managing and communicating the massive amount of information required to document, monitor, and provide decision support. Nurse administrators are often overloaded with information not in a usable form. A goal is to design effective information systems that include the most relevant information, in the right form provided in a timely manner (Grobe, in press).

Distribution.

Distribution is the apportionment and dispersal of health and nursing care to individuals and communities. Decisions about the location and availability of services are made in nursing administration using analyses of health care needs, of resources and markets, and effectiveness projections. According to Henry (1989)

nurse administrators have traditionally emphasized delivering high quality services that are equitably distributed to the greatest number. Beginning in the 1980s, economic considerations assumed more prominence.

Health care programs are designed and distributed for specific patient populations considering disease and health needs, reimbursement, marketing success, and legal and ethical risk. Information about needs is obtained from demographic surveys, vulnerability analyses, epidemiologic studies, physician request analysis, and trend analysis of emergency room admissions (Henry, 1989).

The availability of services in a community depends on the number of beds or visits, admission criteria, and support systems that ensure access to health care services. Nurse administrators help determine the number of beds or services available and the location of these (McDaniel, 1990). The availability of services is influenced by the relationship between the capacity of organizational services and social need. If need exceeds capacity, the service is unavailable to some segments of the population. As Frederickson and Henry (in press) note, this problem presents ethical, economic, and epidemiologic problems.

Evaluation.

Evaluation in nursing administration is examining and judging the quality of the activities and results of nursing personnel in the health and nursing services. According to Pressman and Wildavsky (1973) evaluation is continuous as the three functions of organization, production, and distribution of services are monitored for their ability to economically provide needed services. To improve healthcare, changes are determined using indicators of disease, health, and health

care delivery. Nursing care is evaluated by comparing the care given with the standards of care established for the institution. A quality assurance committee is established to evaluate care. Usually this evaluation is done through audits of medical records, care plans, and incident reports. Patient outcomes are evaluated for effective and timely interventions.

Personnel are evaluated for work performance, special skills, and adverse incidents (Stevens, 1983). Special skills are evaluated as required by law or as needed in work performance. Cardiopulmonary resuscitation (CPR) certification is required annually. Intensive care nurses are regularly recertified for specialty care. Incident reporting systems are developed to document adverse incidents and are valuable in reducing liability, managing litigation, and dealing with individuals who need training or require discipline. The morale of nursing personnel is evaluated using employee satisfaction surveys and opinion polls.

Organizational units in the nursing services are evaluated for the quality of care delivered, financial status, the risk of procedures, and the efficiency and economy of management. The most common process to evaluate the quality of the services provided by specific sub-units is through quality assurance (QA) systems in which care is evaluated against predetermined standards and deficiencies are systematically recorded (Jones, 1989; Simms et al. 1985). Another indicator of quality of care used in hospitals is length of stay (LOS). Length of stay is a standard measurement that has become more important with the introduction of the Medicare policy of reimbursement by Diagnosis Related Groups (DRGs) (Cleverly, 1986). DRGs provide guidelines for the number of days Medicare will reimburse for specific illnesses.

Organizational units are also evaluated for adherence to the financial plan. Financial status is regularly checked to determine if new measures are indicated. Procedures for emergencies and those pertaining to confidentiality are reviewed in nursing administration to determine legal and ethical risks. Unit level managers, both individually and collectively, are evaluated against the organizational plan (Stevens & Mallard, 1989).

As Stevens and Mallard (1989) note, programs in the nursing services are evaluated according to the needs for the service, the effectiveness of the program to meet those needs, the efficiency of the program in providing the services, and the benefits the institution gains. Program needs may be internal, such as in-service education, or external, such as patient services. Some programs are required by law or accreditation while others are optional. Nurse administrators seek to determine if the design of programs can effectively meet identified health care need and if the execution of program plans is efficiently performed and equitably distributed (Tappen, 1989).

Practitioners: Nursing Personnel.

The practitioners of primary concern in nursing administration are nursing personnel. It should be noted, however, that nurse administrators have some responsibility for the performance of the physicians, dieticians, and housekeepers in health care organizations. Responsibility for practitioners pertains to availability and performance.

The availability of practitioners depends on recruiting and hiring sufficient numbers and the appropriate types of personnel, retaining these, appropriately

disciplining or terminating personnel who do not perform up to standard, and matching the skills of personnel with the needs of the individuals and communities served. Recruiting, hiring, and retaining are major functions in nursing administration where securing the required number of skilled nurses is often problematic (Swansburg, 1990). Auxiliary workers are used where possible when there is a shortage of nurses.

The performance of practitioners is related to workload and reflected in the results or outcomes of care, safety of patients and personnel, and the interpersonal relations among patients and personnel (Wholey, Abramson & Christopher, 1986). The liability of a practitioner can be described in economic, ethical, and public relations terms. Unlike other types of service institutions where an incompetent worker is only a productivity liability, an incompetent nurse can cause grievous harm or death. To protect patients and institutions, the task in nursing administration is ensuring that nurses are properly licensed, tested for critical skills, and provided with periodic training and the necessary support (Barnum & Mallard, 1989).

The professionalism of practitioners is reflected in their level of formal education, pursuit of continuing education and orientation to scientific inquiry (Simms et al, 1985). Nurse administrators who raise the level of professionalism in an organization recruit nurses with a baccalaureate or higher degree, establish programs to subsidize tuitions for nurses pursuing advanced education, encourage collaboration between nurses and physicians, and provide a degree of autonomy for professional practice.

This discussion of the parameters of nursing administration provided a frame of reference in the delineation and analysis of key terms in the nursing administration lexicon. The frame of reference also provided a conceptual basis for the development of the taxonomy.

Lexicons and Lexicographic Methodology

Lexicons are usually developed because of a need for uniform understanding of the meaning of terms in a domain. In the development of a lexicon, an early consideration is the size or number of entries. The number of entries or terms to be defined is generally a product of the resources available and the purposes of the lexicon. Because resources are limited, a system must be established to determine which terms merit inclusion in a project. One method lexicologists use to determine the most important domain terms is analysis of frequency (Landau, 1984).

Terms and Term Frequency

The study of term frequency has been closely linked with efforts to automate the indexing and classifying of literature and the construction of dictionaries of terms. With dramatic increases in power and parallel decreases in costs for computerized analyses, computational lexicography has become an important area in linguistics and the calculation of term frequencies has become routine for most automated lexical studies (Cleveland & Cleveland, 1990). Some of the statistics examined in term frequency studies include frequency, average frequency, distribution, relative standard deviation, peak ratio, and range ratio (Huizhong, 1986). In this study, frequency was considered the most important

statistic. Term frequency was used to identify the relative importance of terms as the basis for determining key domain terms.

George Zipf (1949) devoted more than 25 years to studying the frequencies of words from a wide array of texts and proposed that word frequencies follow certain patterns. He developed a formula that showed a relationship between the frequency of a term and its rank order of frequency. If the frequencies of all terms in a textual unit are listed in order, from highest to lowest, Zipf proposed that the rank order of a term multiplied by its frequency would equal a constant number throughout. This formula was shown to be reliable for the most frequent terms, but it became unreliable for the least. Booth (1967) and Goffman (1968) refined Zipf's formula to be reliable over the complete range of term frequencies. Three frequency categories were identified. The terms with the highest frequency were mainly functional terms, the terms with the lowest frequency reflected the style and variety of authors' vocabulary, and the terms in the mid-range were the domain terms (Goffman, 1968). Therefore, it was concluded that if functional terms were identified and eliminated from a frequency listing, the remaining terms with the highest frequency could be considered the domain terms. Subsequent indexing studies have supported the reliability of this approach (Cleveland & Cleveland, 1990; Pao, 1978).

One of the largest term-frequency studies was conducted in the preparation of the American Heritage School Dictionary. Over 5 million words were collected from more than 1000 elementary school text books. Term frequencies were used to select the 86,741 entry terms for the dictionary and to guide in the development of the definitions. Not surprisingly, nearly half the words in the text

books were among the 200 highest frequency functional, but relatively

unimportant, terms. For example "the" occurred 373,123 times. The investigators

selected 700,000 sentences for the KWIC listings to support the development of

definitions (Carroll, Davies, & Richman, 1971). The use of term frequency to

select entry terms for this dictionary and other dictionaries is parallel to the

approach used in this study. The identification of functional terms as the most

frequent, supports Zipf's work. This technique was especially valuable to this

study due to a lack of resources to develop a large lexicon. Term frequency

statistics provided a simple, yet effective criteria to select key terms. The large

number of KWIC listings used to develop definitions in the American Heritage

School Dictionary project indicated the importance of this approach and supports

a parallel method used in this study.

In addition to the relative importance of terms, term frequency studies

have produced other types of semantic information showing a connection between

term frequency patterns and the meaning of the content. The work most useful for

this study was that by Sainte-Marie, Robillard, and Bratley (1973) who analyzed

the occurrences of 44 high frequency nouns to describe the degree of similarity

and difference among 30 plays by Molière. This comparison of patterns of term

frequencies provided an initial support for the method in this study to compare

association profiles of terms.

Term frequency techniques have been shown to be an economical and

effective approach to begin lexical studies. Not only can key terms be identified

but a controlled vocabulary can be developed to ensure similarity of

conceptualization and provide continuity and semantic precision in nursing

administration research. A controlled vocabulary is a consistent set of words for use when indexing and limiting the number of terms to a manageable size. No term frequency studies were found in nursing or management.

Defining Terms

The development of definitions for terms is often considered an art rather than a science. Geeraerts (1987) states that lexicography is characterized by numerous and diverse competing theories and is often guided more by pragmatics than theory. Special purpose dictionaries are often evaluated primarily for utility. One of the most substantial guides dealing with dictionary-making and the development of definitions is Zgusta's (1971) Manual of Lexicography. This historical document was primarily intended for relatively unstudied African and Asiatic languages but the detailed criteria provided for each technique have been valuable in delineating criteria for this study such as those for determining multi-word terms. Zgusta stresses the need for precision and parsimony in definitions. Harmann's (1983) thesis, entitled Lexicography: Principles and Practice, is a more theoretical treatment of dictionary development by 18 European scholars. Harmann's work was also helpful in this study for the development of definitions. One of the most practical sources for English language lexicography is Landau's (1984) Dictionaries: The Art and Craft of Lexicography. Landau provides a thorough discussion of lexicon development and was a constant source of reference throughout this study. Zgusta, Harmann, and Landau agree that the primary resource for constructing definitions is Key-Word-In-Context (KWIC) listings which provide examples in context of how each term is used. Landau

stressed the importance of using diverse contextual sources rather than relying on sheer numbers of KWIC citations from a single source. In this study, each key term was derived from a wide variety of authors.

The structure of definitions vary considerably from lexicon to lexicon, depending on the intended users and the preferences of the lexicographer (Landau, 1984). Unabridged dictionaries provide a variety of linguistic information including pronunciation, etymology, homographs, illustrative quotes, synonyms, antonyms, usage and variants. Some lexicons have limited linguistic information other than the entry terms and the definitions. Figure 1 shows a typical abridged dictionary entry.

Figure 1. Abridged Definition

census	The total number of persons present as in-patients in a health care facility in a given period of time.

Dictionaries designed for machine readability have different data structures and are more difficult for people to read. Figure 2 shows a machine readable entry based on the format used in the Longman Dictionary of Contemporary English (Boguraev & Briscoe, 1989).

Figure 2. Machine Readable Definition

(acute care)
(*36 BrE infml *47 activities and services for individuals with illnesses of a short duration *47 *63 see also *CA short-term care)
((CLASS SERVICES) (PROPERTIES (HOSPITAL-BASED))
(PREDICATION (OBJECT-OF ((CLASS ASSIST)))))

There is no consensus about the format of definitions. The formats, therefore, are usually developed to satisfy the purpose of the lexicon (Boguraev & Briscoe, 1989; Landau, 1984). In this study, lexical entries were designed to allow for machine readability but also to provide the best possible readability for people. This compromise between the two types of definitions was achieved by using formatting "tags" that were relatively unobtrusive to the readers but enabled the computer to isolate specific parts of the linguistic information. Also the content of most interest to people reading the definitions was placed first.

There appear to be two main lexicons published with a focus on the administration of health care services. Timmreck's (1987) Dictionary of Health Services Management and The Aspen Dictionary of Health Care Administration by Goldstein (1989). Neither indicates the exact number of lexical entries but both have about 8000 to 10,000 terms. The format for lexical entries in both is the same: The entry term is first, followed by a short conceptual definition. No other information is given. Neither includes descriptions of the methods used to select terms or to develop the definitions. Neither provides insight into the relationships between terms. In contrast, this study included fewer entry terms but more linguistic information in each entry as well as a thorough discussion of the methodology.

Taxonomies and Taxonomic Methodology

While definitions provide information about individual terms, taxonomies provide information about relationships among terms within the framework of the entire structure of the vocabulary. Studies suggest that all natural languages have a taxonomic organization and reflect a universal mental structure (Kay, 1971). Term structure is reflected, covertly, in the patterns of term occurrences. A prominent method for discovering covert patterns or structures has been the study of co-occurrence data or term co-frequencies.

Term Co-Frequency

Frequency analysis was extended early to co-frequency analysis in an effort to refine the automated indexing, abstracting, and classifying of documents. Written in 1960, the program WORDS relied on frequency-based principal component analysis and word-word intercorrelation matrices to classify, extract, and analyze thematic content in text (Iker, 1974). Annual business reports usually are comprised of tables, charts, graphs, and narrative. Most accounting researchers, as well as stockholders, have focused on the visual components and ignored the narrative. WORDS was applied to the narrative of 74 annual reports from large companies and, through term co-frequency analysis, the investigators were able to delineate patterns that were not discernable by reading. With these patterns, they were able to predict the future performance of the companies better than with techniques that were used to predict performance based on the quantitative data in the tables, charts, and graphs (Frazier, Ingram, & Tennyson,

1984). The ability to delineate patterns, using co-frequency statistics supported the value of using co-frequency statistics in this study to delineate valid patterns.

Maron and Kuhns (1960) developed several measures of "probablistic indexing" using word co-occurrences. Probablistic indexing is a system of linking documents statistically rather than by cross-referencing. Maron and Kuhns drew a sharp distinction between semantical and statistical relationships, considering the statistical relationships or co-occurrence statistics to be more sensitive to textual context and therefore superior for index development. Rather than the "see" and "see also" cross references pointing to synonyms or near synonyms, they pointed to terms that were statistically co-located. By using co-occurrence data a structure was delineated based on the facts contained in the documents rather than the meanings of individual terms. This perspective of the structure of a body of terms was used in the taxonomic phase of this study.

Doyle (1962) used co-occurrence data to develop association maps as an alternate to traditional indexes. The graphic portrayal of the co-occurrence data provided an informative index. The association maps contained symbolic and spatial components to increase the amount of information associated with the index. Rather than the traditional index arrangement of terms grouped alphabetically, terms were grouped according to the similarity of concepts or meaning.

Borko and Bernick (1963, 1964) developed an empirically based method to generate document classification systems using co-occurrence data. Ninety high-frequency words were selected for co-occurrences analysis and produced indexes of key terms more efficiently than other methods but with content

consistent to those manually compiled. In this study, computer based co-frequency analysis took advantage of this same efficiency and the ability to evaluate multiple variables by using cluster analysis.

Amsler (1980) developed a multilevel taxonomy using co-occurrence data from The Mirriam-Webster Pocket Dictionary. Key words in the definitions were identified prior to the development of the taxonomic structure. This is the earliest study found that used a dictionary base for a taxonomy. The resulting taxonomy was a multilevel hierarchical index.

The usefulness of co-occurrence data for indexing was further supported by Courtial, Callon, and Sigogneau (1984), who used "polar mapping" as an intermediary step in developing hierarchical indexes. Hierarchical indexes reflect the structure or taxonomy of a field when applied to a representative sampling of text. In this nursing administration study hierarchical indexes were also developed from a representative sampling of text.

A different type of map, but one potentially useful in deriving insights from co-frequency data, is the network map. Co-occurrence data was analyzed from the Longman Dictionary of Contemporary English (LDOCE) in a recent study (Wilks, Fass, Guo, McDonald, Plate, & Slator, 1989). The LDOCE was machine readable with 41,100 entries. Paired comparison analysis produced nearly two and a half million frequencies of co-occurrence. From a co-occurrence matrix, network maps were produced depicting the relationships between key terms associated with selected concepts. The investigators suggested that although co-occurrence statistics may not provide a complete reflection of natural language characteristics, useful sub-systems and much semantic information can

be derived. An important advantage of obtaining co-occurrence data from a dictionary base rather than free text sources was that the controlled vocabulary of the dictionary held the co-occurrences to a manageable number. This same concept of using a controlled vocabulary was used in this study.

In addition to term co-occurrence data, other co-occurrence patterns have been studied such as citations and association profiles. A classification scheme called a "Geography of Science" was developed by Small and Garfield (1986) by using co-occurrences of citations from the Science Citation Index and the Social Sciences Citation Index. These indexes provided a sample size of several million items. A cluster analysis was performed based on co-citation frequencies, which is the frequency with which two documents are cited in the same document. The overall progress of science was summarized in the Atlas of Science which also shows yearly trends (Small & Sweeney, 1985). A prominent feature of the geography of science has been to allow the data to dictate the taxonomy without an a priori structure. In the nursing administration study, the absence of an a priori structure and the use of cluster analysis were also a prominent features.

There are two methods which rely on co-occurrence data to determine the structure of knowledge in a field. The Geography of Science uses citations as the co-occurrence data while other studies, such as this study, use term co-frequency as the co-occurrence data, however the principles are similar for both types of studies as are the methods for analyzing the data (Courtial, Callon & Sigogneau, 1984).

. Numerical taxonomy was used to analyze relationships from a collection of 17th century manuscripts. A profile of variables was constructed for each

manuscript which were then compared a pair at a time and a similarity coefficient
was calculated. The formula used was:

$$S = \frac{m}{m + r - i}$$

where S = similarity coefficient, m = the number of matching variants, r = the
number of remaining variants and i = the number of impossible comparisons. The
symmetrical matrix of comparisons was analyzed with four different clustering
algorithms and the resulting phenograms were compared for the most informative
solution (O'Keeffe & Journet, 1983). The O'Keeffe & Journet formula was the
basis of the normalization formula used in the nursing administration study as
described in Appendix A. The technique of comparing profiles was also used in
the nursing administration study.

Co-frequency techniques have been largely overlooked in the past
(Smadja, 1989) and much of the information to be obtained by co-frequency
studies is yet to be discovered. However, co-frequency data have been shown to
provide valid and effective information in the automatic generation of indexes of
key terms, maps of domain concepts, and hierarchical taxonomies. Term co-
frequencies provide evidence of relationships between terms in a network of
terminology. Co-frequency data can be based on term-term co-frequencies,
citation-citation co-frequencies, and term-association profile co-frequencies. Co-
frequency studies were not found in either the nursing or management literature.

Taxonomies in Nursing

Aydelotte and Peterson (1987) describe current nursing taxonomies as unsophisticated. Most nursing classification efforts have been on patient classification or nursing diagnoses. Numerous types of patient classification systems have been developed and tested, slowly evolving from global, subjective types to more precise types. Over 40% of the patient classification systems have been developed by single hospitals. Other commercial patient classification systems have been adapted to individual hospitals (Hylton, Johnson & Moran, 1986; Nagaprasanna, 1988; Thompson & Diers, 1988). The usefulness of some patient classification systems is limited by language imprecision. Future development of patient classification systems will benefit from improved understanding of nursing terminology and the taxonomic insights gained from Grobe's research (1988b, 1989, 1990, in press) and this study.

The largest taxonomic endeavor in nursing has been developing a taxonomy of nursing diagnoses. The first formal efforts were begun in 1973 (Hinshaw, 1989a). In 1987, the American Nurses' Association board of directors recognized the North American Nursing Diagnosis Association (NANDA) as the official body for developing and approving nursing diagnoses (Lang & Gebbie, 1989). The NANDA taxonomy is a formalized, hierarchical organization of categories of human responses to actual or potential health problems that nurses identify and treat (Lang & Gebbie, 1989; Loomis & Herman, 1990; Nursing: A Social Policy Statement, 1980). Various strategies have been proposed and tested in the development of nursing diagnoses (Gebbie & Lavin, 1975). Ongoing national conferences have facilitated the integration of divergent views. However

searching for the language to describe the responses upon which the practice of nursing is based continues to contribute to the struggle faced by those working on the refinement of nursing diagnoses (Loomis & Herman, 1990; Pender, 1989).

Differing opinions by various factions of nurses have hampered the development of nursing diagnoses. Foundational language studies seem to be missing. In addition, a lack of uniform nomenclature and precise, reliable data have delayed progress (Aydelotte & Peterson, 1987). To meet these and other data needs of nurse researchers, efforts are being made to standardize a set of data called the Nursing Minimum Data Set (NMDS), to be gathered across all types of health settings. Werley has proposed that NMDS be built into nursing information systems nation-wide (Devine & Werley, 1988; Werley, 1987; Werley & Lang, 1988; Werley, Devine, & Zorn, 1989).

Grobe (1988b, 1989, 1990, in press) is developing a lexicon and taxonomy of intervention statements used by nurses in their work with chronically ill adults. After gathering statements from nurses at work in hospitals, Grobe is examining the meaning and relationships of the words nurses use. The goals are to understand the equivalent ways of expressing similar nursing phenomena, to understand the meanings of the terms, to develop a valid way to categorize terms, and to devise electronic means of storing and retrieving nursing terms. This study, based on nurses' natural language, will bring semantic clarity to those working on other nursing taxonomies including the NANDA taxonomy.

The number of other classification efforts in nursing is increasing. Verran (1981) developed a taxonomy of nursing practice in ambulatory care using a Delphi technique. Hastings and Muir-Nash (1989), worked on refining

and validating Verran's taxonomy. The original ambulatory nursing practice taxonomy contained seven areas of responsibility and 41 activities but subsequent refinements have added to both categories. No efforts were found cross referencing concepts with the NANDA taxonomy or explaining why this was not done. The utility of this taxonomy may never be fully realized without a link to other important taxonomies.

Raymond (1989) developed a taxonomy of specialty nursing practice. Experts in nursing certification rated 10 areas of specialization on a 9-point scale. A symmetric matrix of averaged scores was analyzed with multidimensional scaling (MDS) and cluster analysis. A three dimensional solution space was selected for the MDS and the cluster analysis was superimposed on the graphic. The results of this study correlated .72 with two other, more rigorous time consuming methods, thus supporting the validity and cost effectiveness of professional judgement in MDS and cluster analysis studies. Raymond's study is the only research found that uses MDS or cluster analysis in developing a nursing taxonomy.

A classification of nursing technology, adapted from the Office of Technology Assessment's definition of health care technology, was proposed to ensure that nurses are recognized and adequately compensated for the work tasks they perform (Jacox, Pillar, & Redman, 1990). The suggested taxonomy was a four by six matrix.

The existing nursing taxonomies do not adequately reflect the domain of nursing administration. Nearly all taxonomic efforts in nursing are characterized by an effort to find adequate terms that express concepts clearly. Yet few studies

attempt to clarify the terms in general use. Many nursing taxonomies are based on conceptual frameworks. However, taxonomists insist that the most useful taxonomies are derived directly from empirical indicators in the content without *a priori* theoretical frameworks (Clifford & Stephenson, 1975; Fleishman & Quaintance, 1984; Sneath & Sokal, 1973). The absence of nursing administration taxonomies or parallel lexical studies illustrates the early stage of development of nursing administration research and the need for scientific analysis.

Management Taxonomies

Numerous taxonomies can be found in management. Some are based on work using numerical methods, however most are theoretically based with little initial empirical support. The strongest taxonomies show the multi-dimensionality of the subject being described. While language is an important consideration in developing taxonomies, no taxonomic studies in management were found that were lexical in nature.

Samuel and Mannheim (1970) developed a classification scheme of bureaucracy based on a sample of 30 Israeli production plants. Weber's theory of bureaucracy was used as the framework. All data were quantified and analyzed using the Guttmann-Lingoes multidimensional scalogram analysis-I. Profile mappings were produced for each organization. Multidimensional scaling allowed the investigators to classify complex profiles of the organizations.

Haas, Hall and Johnson (1966) studied 75 organizations by using 99 dichotomous dimensions with numerical taxonomy methodology. Computers tabulated profiles of all organizations--first within the whole group and then

within each cluster--and delineated 10 major groups of organizations. The reliance on computer analysis of 99 variables provided a high degree of reliability. The grounding of the study in empirical data supported confidence in its validity. Haas et al made it clear their philosophy was "to let the data indicate which variables tend to 'hang together' in the world of organizational phenomena" (p. 161). This same belief of letting the data drive the outcome of the taxonomy with no a priori theoretical framework was used for the nursing administration study..

Frame of Reference

In summary, the frame of reference for the study is provided by the key elements of nursing administration as found in the literature. The frame of reference provided a guide for decisions about the alpha and beta phases of taxonomic development. The key elements in the frame of reference are described and illustrated using the following illustration.
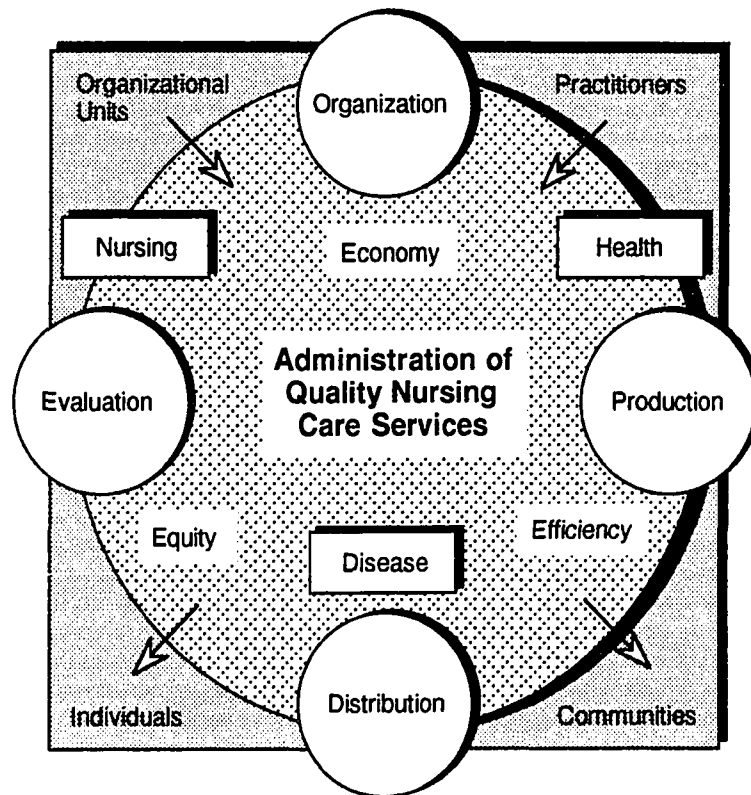
The outer square represents the domain of nursing administration. The large inner circle represents the delivery of quality nursing care services with entering arrows showing the contribution of practitioners and organizational units, and exiting arrows showing the populations served -- individuals and communities. The four major functions of organization, production, distribution, and evaluation are shown as integral to the administration of nursing services. Nursing, health, and disease are highlighted as central concerns as are economy, efficiency, and equity.

Developing an understanding of nursing administration terminology involves two phases. First there is the alpha or lexicon phase to isolate individual terms as shown here.
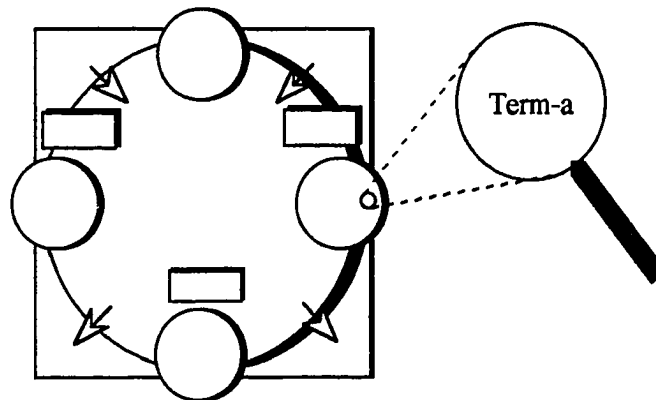
The magnifying glass represents the close analysis of each individual term to determine its meaning. Second there is the beta or taxonomy phase where the relationships of terms for nursing administration are mapped as suggested by the following illustration.
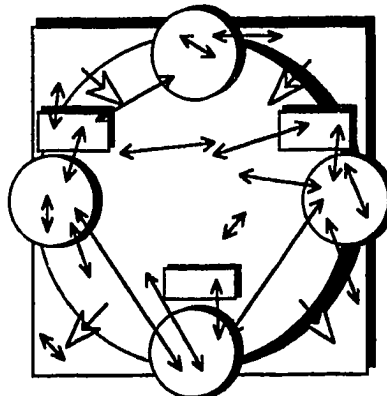
In taxonomic studies, a balance is sought between weak and rigid *a priori* conceptual structures. Perhaps this is why taxonomists prefer "frame of reference" to "conceptual framework." If the frame of reference is insufficiently developed it is difficult to evaluate the lexicon and taxonomy for representativeness of terms and relationships. But if the frame of reference is too rigid it is difficult to use it in building a taxonomy.

The frame of reference for this study, developed through an in-depth review of the literature, was used both deductively and inductively. First, an illustration was developed as a visual representation. Second, 85 key terms were selected using a frequency listing and expert judgment. The key terms were compared to the frame of reference for representativeness. Third, when generating the term meanings, the frame of reference was used as a guide in searching for defining relationships. Fourth, the frame of reference was used in making clustering decisions and in evaluating the completeness of the taxonomy.

CHAPTER 3

METHODOLOGY

Introduction

In this chapter, the design, sample, and procedures are described. Pilot studies, formulas, and computer programs are presented and discussed. Reliability and validity are addressed and the chapter closes with a discussion of the study limitations.

Design

The study design is descriptive. A descriptive methodology is appropriate for relatively unexamined areas of concern where a formalized theory base is weak or non-existent (Stern, 1987). An inductive approach is necessary because, with the exception of dictionaries, no generalized work has been reported in either lexicography or taxonomy development for nursing administration. The design has two stages: the alpha stage, addressing research questions 1 and 2, in which terms are identified and defined, and the beta stage, addressing research question 3, in which relationships between terms are delineated. The lexicon development or alpha stage is prerequisite to the relational beta stage. The alpha stage involves identifying and defining key terms. The beta stage involves the delineation of relationships among terms to show the overall structure of the lexicon.

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Sample

The population of interest was key terms in published articles in nursing administration. The data sources were journal articles published from 1985 to 1990 focusing on the practice of nursing administration in the journals Nursing Management (n=72), Journal of Nursing Administration (n=66), Nursing Economics (n=36), and Nursing Administration Quarterly (n=24). The four were selected because of their relevance: They are the most widely circulated journals focusing on the management of nursing services. These journals target nurse administrators at the first, middle, and executive levels. Table 1 shows the journals, their circulation, issues per year, and level of nurse administrator targeted.

Table 1

Journal Circulation, Issuance and Audience

Journals	Subscription Circulation	Issues/Yr	Audience
Nur Man	130,906	12	First-line and middle nursing management
JONA	13,309	11	Executive nurses
Nur Eco	15,700	6	Executive nurses
NAQ	5,353	4	Executive nurses

Abbreviations :
Nur Man = Nursing Management
JONA = Journal of Nursing Administration
Nur Eco = Nursing Economics
NAQ = Nursing Administration Quarterly

The sample was selected from 1056 articles in the four journals that met two criteria for inclusion. First, they addressed operational concerns in nursing administration, using the frame of reference. Operational concerns include the organization, production, distribution, and evaluation of the impact of nursing services and the practitioners and organizational units responsible for these. Second, the articles were full length, expository pieces. Editorials, book reviews, interviews, abstracts, proceedings, and briefs were excluded. The investigator, a panel of three graduate nursing administration students, and one director of nursing reviewed all articles in the journals and developed a list of articles that met the two criteria. Interrater reliability was 87%. Interrater reliability, for the study, was determined based on proportion of agreements. Disagreements about article selection were resolved by a third person's decision. The review forms are in Appendix B.

The sample size was determined by weighing the need for a large database to support KWIC listings and the capacity of the data-handling technology. A sample of 284 articles was considered sufficient using both criteria. A computer program, Article Sampler (Heyden, 1990), was developed to randomly select articles weighted according to the proportion of issues published by each journal. The first page of the Article Sampler printout is in Appendix C. Appendix D is a bibliography of the sampled articles.

Table 2 shows the sample distribution by number of issues for each journal. The sample is proportionally distributed by journal issues and articles meeting criteria.

Table 2

Sample Distribution by Journal

	Number of Issues During Sampling Period	% of Issues Published in Sampling Period	Number of Articles Meeting Criteria	% of Articles Meeting Criteria	Number of Articles in Sample	% of Articles Sampled
Nur Man	72	37%	415	39%	98	35%
JONA	66	33%	319	30%	95	33%
Nur Eco	36	18%	174	16%	47	17%
NAQ	24	12%	148	14%	44	15%
Total	198	100%	1056	100%	284	100%

Table 3 shows the article sample distribution by journal and years. The distribution is proportionally equivalent. The differences were determined by the random selection procedure.

Table 3

Sample Distribution by Journal and Year

	1985	1986	1987	1988	1989	1990	Total
Nur Man	20	16	18	13	18	13	98
JONA	18	15	13	21	16	12	95
Nur Eco	6	9	10	10	7	5	47
NAQ	7	8	6	8	7	8	44
Total	51	48	47	52	48	38	284
% Expected	17%	17%	17%	17%	17%	17%	100%
% of Sample	18%	17%	17%	19%	17%	14%	100%

The text in each article was used in its entirety to assure semantic coherence (Weber, 1985). Semantic coherence is the consistent meaning provided by a block of written text assuming the author uses words consistently. Graves and Corcoran (1989) reinforce the validity of using whole-text data. A pilot test supported the use of the entire text. The term frequencies produced by three sampling schemes were compared with the term frequencies for the entire text. Each sampling involved selecting 500 words from a single article. Scheme-1 calculated the term frequencies of the last 500 words, Scheme-2 of the first 500 words, and Scheme-3 of the last 250 plus the first 250 words. Of the 10 most frequent domain terms in the entire text, Scheme-1 had only two in its 10 most frequent terms, Scheme-2 had six, and Scheme-3 had seven.

In some fields, key terms can be identified by capitalization (Danielson, 1990). A pilot test of 11 articles was done using Capper (Danielson & Heyden, 1990) to abstract a list of all capitalized words except the first word of a sentence. Of the 622 capitalized terms, 426 were acronyms of diseases, professional associations, journals, and titles such as RN and LVN; 167 were proper names of authors, places, and organizations; 16 were statistical abbreviations such as N (for subjects) and P (for probability); and 12 were the titles of laws. Only one capitalized term, "Infection Control," was considered a nursing administration domain term but it had been separated by the computer program from the book title "CDC Guidelines for Infection Control." Based on these findings, the decision was made not to use capitalization as an indicator of key terms.

<div align="center">Procedures</div>

The details of the techniques used to query the 284 file database are in

Appendix E. The source codes for select computer programs are in Appendix F.

Flow charts for the methodology are in Appendix G. The procedures and

sequence for achieving the specific aims were as follows.

Identifying and Selecting Key Terms

1. Developing a database of nursing administration literature. The

randomly selected articles were scanned, digitized and converted to American

Standard Code for Information Interchange (ASCII) text by a Hewlett Packard

ScanJet Plus flat bed scanner and character recognition software, OmniPage

(1989). The ASCII text was saved in Microsoft Word (1989) files by individual

article. The spell checker in Microsoft Word was used to detect and correct

digitizing errors. The total number of words scanned into the database was

691,505.

2. Generating an initial alphabetized word listing with word frequencies.

Content analysis software adapted from the program WDFRQ (Danielson, 1987)

was used to generate a listing of all words in the database arranged alphabetically.

A "stop word" list, in Appendix H, automatically eliminated 171 functional words

from the frequency list. The stop word list had been refined during trials with the

data to identify the most common functional words. The purpose of the stop word

list was to make it easier to identify key terms by shortening the number of other

terms in the list.

3. Lemmatizing the text. Experts reviewed the terms that appeared in more than one form among the 1000 most frequently used terms and judged which were potential key terms. The terms identified as potential key terms were lemmatized in the database. Lemmatization identifies root words by formatting different grammatical forms so they are treated as a single unit. For example "managers" and "manager's" were changed to "manager (s)" and "manager ('s)." Therefore the root word, "manager", was counted in both forms. There were 97 groups of terms identified for lemmatization. Interrater reliability was 91%. In Appendix I the interrater form and word list is presented with the terms selected for lemmatization by the raters highlighted in **bold** letters.

4. Formatting the text for multi-word terms. The database was analyzed with WdPairs 1.2 (Heyden, 1991e) to identify words that combined to form a term. WdPairs developed a frequency list of all pairs of adjacent words not separated by punctuation. Experts reviewed the term pair list and identified 277 two-word terms that were potential key terms. Interrater reliability was 82%. (See Appendix J for the instruction form and the first page of the WdPairs printout and Appendix K for the list of 277 term pairs.) These terms were formatted throughout the database with a "+" between each word so computer programs would treat them as one word. For example "head nurse" became "head+nurse." After the database was formatted WdPairs was used a second time to identify additional multi-word terms. Experts reviewed the multi-word term list and identified 47 additional two- and three-word terms that were potential key terms. Interrater reliability was 80%. (See Appendix L for the instruction form and the first page of the WdPairs printout and Appendix M for the list of 47 multi-

word terms. These terms were formatted throughout the database with a "+"
between each word as was done with the first set of multi-word terms. The
criteria for combining words for multi-word terms in both iterations were as
follows.

1. The combined words name an entity distinct from any single word
   in the term.

2. Another word cannot be substituted for any word in the term
   without changing the meaning of the entire term.

3. There is a one word synonym for the multi-word term.

4. The multiple words in the term perform the same syntactic
   function as a synonym (Zgusta. 1971).

4. Extracting the most frequently used domain terms as the lexical
vocabulary. A second term frequency count was done on the formatted text files
of each article. The frequency lists for all the articles were combined into a single
list to view the total word frequencies. Three directors of nursing, three nursing
administration professors, and one nursing administration doctoral candidate
reviewed a list of the 1800 highest frequency terms and judged the most important
terms. Key domain terms were selected from the frequency list beginning with
the highest frequency terms that met the criteria outlined. (See Appendix N for
the instruction sheet and first page of the frequency listing.) Key terms were
those that four of the seven selected. The expert panel identified 85 key domain
terms.

Defining the Terms

1. Extracting each sentence containing a lexical term. The unit of analysis

for the context of key terms was a sentence. The key terms selected were

programmed into KWIC-Diss 1.2 (Heyden,1991i). KWIC-Diss analyzed the

entire database, found every sentence in which a key term occurred, and placed

these sentences in an output file. The collection of all sentence examples of the

key terms was the citation file. The citation file was sorted and dispersed to

produce a Key-Word-In-Context (KWIC) listing file for each term. Figure 3

shows an example of a short KWIC listing.

Figure 3   KWIC Listing

acuity+system	12023	#—3	With some modifications, these patient *acuity+system (s) can be used to manage and maintain a high quality+of+care within productivity constraints.
acuity+system	11060	#—56	The new patient *acuity+system was based on six broad category (s) rather then a lengthy check list.
acuity+system	14041	#--21	Until the GRASP patient *acuity+system was instituted, the quality+of+care fluctuated widely.
acuity+system	13023	#—9	The increase in the average acuity of patient (s) is reflected in the need for a lower patient to nurse ratio and nurses with a higher skill+level and a greater reliance on sophisticated *acuity+system (s) to assist staffing decision (s).

(Appendix O includes two pages from the KWIC listing for quality+assurance.)

For the most frequently used terms, the KWIC listings were over 60 pages in

length and included up to 900 sentence examples.

The format of each citation in the KWIC listings was as follows. The term

appeared in the left hand margin. Following the term was an identification

number for the article source of the sentence and then the number of the sentence within the article. With this information, any sentence could be quickly located in the original article text file to validate its accuracy and source. Following the sentence number was the complete sentence with the term.

2. Formatting the definitions. KWIC listings were used to determine the meanings of words and were a basic resource for the definition development (Boguraev & Briscoe, 1989; Borko, 1967; Carroll, Davies & Richman, 1971; Landau, 1981; Martin, Al, & van Sterkenburg, 1983). Figure 4 shows a definition for "acuity+system" using the short KWIC listing in Figure 3.

Figure 4   Definition

---

acuity+system   A management tool for classifying patients according to care needs. Used to balance the efficient management of staffing with the quality+of+care for patients.

Definitions were formatted for machine readability and cross referenced with terms in the International Nursing Index (INI)(1990). This link to a standard database can be of value in future uses of the lexicon. Machine readability was achieved by format rules based on four criteria: (a) Formatting "tags" were included for isolation of specific parts of the linguistic information included in the definitions, (b) data elements were included as necessary for other steps in the methodology or for evaluative purposes such as the association profile data, (c) elements of greater interest to readers were positioned first, such as definitions and examples, and (d) cross-referencing was included as a link with other data bases. The format for definitions is shown in Figure 5.

Figure 5. Definition Format

<div style="text-align: center">a **b.** c d e [f,] g h {i} j</div>

Key:

 a) entry term

 b) sense indicator - **bold** and set off with a period (leave off if only one)

 c) definition

 d) sentence example from KWIC listing

 e) synonyms or near synonyms

 f) association profile- set off by square brackets. Each profile element

  separated by a comma.

 g) relative frequency of entry term per 100,000 terms

 h) relative distribution of term per 100 articles

 i) cross reference with INI if available - set of with curly brackets

 j) " ^ " set off by spaces to mark the end of each definition

---

The definition statement begins with an ISA statement. An ISA statement identifies the term as a member of a group of terms for example "a nursing unit is a physical area of a healthcare institution." In most cases the "is a" is inferred. For example: "nursing unit A physical area of a healthcare institution." "Nursing unit" is one of a group of terms that describe a physical area of a healthcare institution. Following the ISA statement there are usually several statements describing the meaning, significance, and use of the term.

Definitions do not include pronunciation, etymology, and other common features of general dictionaries. Machine readability determined much of the

formatting specifications such as the "^" at the end and the brackets and

parentheses. Sentences or phrases were included to illustrate the use of the term

in the literature. Figure 6 shows an example of a complete lexical entry for the

term "acuity+system" based on the format in Figure 5.

Figure 6   Complete Lexical Entry Example

---

acuity system   A management tool for classifying patients according to
        care needs. Used to balance the management of staffing with the quality
        of care for patients. Synonym: patient classification system. Example:
        "With some modifications, these patient *acuity systems can be used to
        manage and maintain a high quality of care within productivity
        constraints" (Kirk, 1990). Association profile: [1,6,3,3,8,9,12,41,58]
        Relative Frequency: 15.2/100K Relative Distribution: 12.7/C
        {INI#C102.41.004} ^

---

3. Creating the definitions. The steps used to develop each definition were as

follows.

1.   Evaluate the frequency listing made from the KWIC listing for each

        entry term. Select the most frequent co-occurrence terms to focus

        and bound the statements of meaning.

2.   Examine each KWIC listing for the concepts associated with the

        entry and co-occurrence terms. Search for key qualifiers that

        highlight the distinctiveness of the entry term. Identify themes and

        relationships. List all insights on a worksheet.

3.   Identify a sentence that exemplifies how the term is used in the

        context of nursing administration and that amplifies the meaning of

        the term.

4. Refer to unabridged dictionaries of the English language, and to dictionaries of terms in nursing, medicine, health services, and economics to find how the same or similar terms are elements of the entry.

5. Locate the term being defined in the International Nursing Index tree structure.

6. Develop an initial definition starting with an ISA statement followed by statements that explain and amplify the meaning for nursing administration.

7. Compare the initial definition with the study frame of reference noting compatibilities and incompatibilities.

8. Obtain evaluative comments from an expert in nursing administration.

9. Refine the statements of meaning in the definition.

10. Strive for preciseness and parsimony.

The dictionaries and lexicons, published in the last five years, that were consulted in developing definitions included <u>Dictionary of Health Care Management</u> (Rhea, Ott, & Shafritz, 1988), <u>Dictionary of Health Services Management</u> (Timmreck, 1987), <u>Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health</u> (1987), <u>Every Manager's Guide to Information Technology: A Glossary of Terms and Concepts for Today's Business Leaders</u> (1991), <u>The MIT Dictionary of Modern Economics</u> (Pierce, 1986), <u>Mosby's Medical Dictionary</u> (1987), <u>The Random House Dictionary of The English</u>

Language (Unabridged) (1987), and Webster's Third New International

Dictionary (Unabridged) (1986).

An example of the procedure applied to the definition of "quality

assurance" follows. The first step was to examine the terms the article authors

used to describe the entry term. Figure 7 shows the co-occurrence terms with a

frequency of 7 or above in the KWIC listing.

Figure 7. Excerpt from frequency listing of a KWIC listing for quality assurance.

Freq/KWIC Term #2016			
137	*quality+assurance	10	department
36	committee	10	patient+care
34	*qa	9	research
30	coordinator	9	process
28	nursing	9	practice
28	activity	9	improved
25	staff	8	standard
18	unit	8	reports
15	data	8	report
14	system	8	evaluation
14	hospital	8	education
11	information	7	reported
11	care	7	provide
10	service	7	nurse
10	problem	7	model
10	patient	7	health
10	member	7	director+of+nursing
10	involvement	7	development
10	errors	7	average

The major theme in the KWIC listing was the role of the quality assurance

committee in solving problems and setting and maintaining standards. A sentence

from the KWIC listing was selected to illustrate how the term is used in context

and to amplify its meaning. Numerous definitions of terms were reviewed from

unabridged dictionaries and technical lexicons. Some terms reviewed include

quality, assurance, quality assurance, validation, mechanism, and standards.

Quality assurance was found as an indexing term in the International Nursing

Index (INI), number N4.761.700, and indexed as a subcategory of "quality of

care." The initial definition was developed and considered in relation to the study

frame of reference. The importance of quality assurance to the central purpose of

administering quality nursing care services emphasized the importance of this

term. Many of the activities in quality assurance involve the aspect of evaluation

but the influence of these activities are focused on the organization and

production of care on organizational units and their effect on individuals. After

review of the definition by an expert in nursing administration, the definition was

refined as follows. (Note the terms underlined are the terms used from the

frequency listing in Figure 7 and are only underlined for this example.)

quality assurance (QA)   A validation mechanism used in most healthcare

facilities to measure, improve, and ensure the quality of nursing care activities

and their documentation. A program of quality assurance is required for

accreditation by the Joint Commission for Accreditation of Healthcare

Organizations. To monitor the level of quality, the nursing care delivered is

compared to nursing care standards. In hospitals a quality assurance

committee develops new standards, refines existing standards, identifies and

evaluates problems, and monitors patient care. A quality assurance

coordinator chairs a quality assurance committee and coordinates activities to

monitor practice, gather data, and implement change. A quality assurance

coordinator often reports directly to the Director of Nursing. Many of the quality assurance activities entail retrospective medical record audits for medication errors, insufficient documentation, improper procedures, and prolonged response times to patient needs. Some quality assurance programs conduct concurrent audits while patients are receiving care. Both total organization and unit base approaches are used to measure quality of care. Unit based approaches are characterized by the involvement of nursing staff in all quality assurance activities including information gathering and analysis. **Example:** "The *quality assurance* commitment assures the appropriate preparation of practitioners to meet the specific needs of the institution; maintains criteria that establishes an acceptable level of competence with which its providers must comply; establishes a baseline for delivering anticipated levels of nursing service; and indicates a mechanism upon which a performance review process will be developed" (Porter-O'Grady, 1985) (JONA). **Synonym:** none. **Association Profile:** [17,7,2,2,6,9,4,2,4,17,8,0,6, 4,6,15,9,2,11,4,0] **Relative Frequency:** 23.5/100K **Relative Distribution:** 19.0/C {INI#N4.761.700} ^

Developing a Taxonomy

1. Deriving Coefficients of Dissimilarity. An association profile (AP) was developed by examining the frequencies of terms in the KWIC listings. An association profile is a list of indicator terms that are associated with the entry term (Soergel, 1974). All of the co-occurring terms in the KWIC listings were compiled and the most frequent co-occurring terms were identified. The entry

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terms were not found with high frequency in the KWIC listings of other entry terms. Furthermore, it was discovered that the most frequent co-occurring terms found in the KWIC listings were general terms such as care, cost, and time. Numerous trials of different combinations of the highest co-occurring terms were made to identify the indicator terms that would differentiate between terms. Twenty-one profile indicator terms were identified as providing adequate differentiation. These 21 profile indicator terms were: activity, care, clinical, cost, department, hospital, management, need, nurse, nursing, patient, physician, problem, program, service, staff, system, time, unit, well, and work. As the profile indicator terms were being selected the goal was to find terms that were related to the key elements in the frame of reference of nursing administration.

The association profile numbers were normalized to indicate the frequency of co-occurrence for each indicator term for 100 occurrences of the entry term. The association profiles for each key term were compared a pair at a time for the degree of dissimilarity. The number of paired comparisons was derived from the formula:

$$C_p = \frac{N(N-1)}{2}$$

where C_p is the number of paired comparisons and N is the number of key terms.

The 85 terms produced 3570 paired comparisons. The association profiles for the key domain terms in each paired comparison were evaluated by counting the occurrences of association terms that appeared in both profiles. The total shared occurrence counts for each profile pair were normalized to a coefficient of

dissimilarity, resulting in a ratio numeric between 0.0 and 1.0, the larger the number the more dissimilarity or distance between two terms. The normalization formula for the Coefficient of Dissimilarity was:

$$D = 1 - \sum \frac{C_s}{t_s}$$

where D is the Coefficient of Dissimilarity, C is the occurrences of common (shared) association terms , t is the total occurrences of association terms, and subscript s is the occurrences of the association terms of the key term with the smallest relative number. (See Appendix A for the rationale used in the development of this formula.)

The coefficients of dissimilarity were carried to four decimal places to avoid ties in the data and formatted in a symmetric matrix. The matrix was 85 rows by 510 columns (6 columns per coefficient). A portion of the matrix is in Appendix P.

2. Delineating patterns and relationships in the terminology. The matrix of coefficients of dissimilarity was analyzed using cluster analysis. Cluster analysis is a multivariate statistical procedure that groups entities in such a way that members of a group are similar in some way but different than entities in other groups. Cluster analysis is used to produce a classification from initially unclassified data (Everitt, 1980). The CLUSTER procedure of the Statistical Analysis System (1986) was used to analyze the data with Ward's minimum variance method option. The output from this analysis was used in determining

the initial taxonomic groups and the hierarchical structure. The output of the cluster analysis is in Appendix Q. The level of grouping to determine the initial groups was set at an R-squared between .7 and .5. The initial grouping according to R-squared values must sometimes be adjusted to develop a clustering solution that can be interpreted. The level at which to stop cluster formation and decide on groups is dependent on symmetry and logical analysis. A pilot study, with a subset of data from 10 articles, compared different clustering options including density linkage, centroid hierarchical, single linkage, two stage density linkage, average linkage, and Ward's minimum variance. Ward's minimum variance method produced the most symmetrical tree structure while the single linkage method produced an unusable degenerate solution.

Coding and categorizing is a data reducing technique in content analysis. This initial taxonomy was a first step in developing a hierarchical organization of nursing administration terminology. As categories are adjusted or verified through future work, the taxonomy will be refined.

Representativeness of Sample

The sample was selected from four leading journals considered highly relevant to the field and criteria of inclusion were used. The population of interest was key terms in published articles in the field of nursing administration. A random sample of manageable size yet large enough to contain a sufficient number of terms was used. The sample was considered representative of the key domain terms: The 85 terms appeared in the frame of reference.

Reliability

Throughout the study, judgment based on pre-established criteria was required. At judgment points, interrater reliability was assessed by the independent judgments of the researcher and trained colleagues and considered sufficient at an 80% agreement level. Interrater reliability was based on the proportion of agreement. A third person was used to review the items where the raters disagreed and resolved the discrepancy. For the selection of 85 key terms seven experts were selected to provide a consensus on the importance of the terms to nursing administration.

Since one threat to reliability is random error, the use of computers for many of the operations reduced potential reliability problems. The reliability of computers is unaffected by the pressure of time, conflicting demands, boredom, or inattention which often influence the reliability of human endeavors (Grobe, 1990; Powers and Knapp, 1990). Therefore, random error during computer control of the data was not considered a factor except for formatting or operator error. To reduce formatting errors, "find" and "change" functions in <u>MicroSoft Word</u> (1989) were used and computer programs were written by the investigator to control formatting. Repeated accuracy checks assured that the programs were functioning properly and used appropriately.

Validity

Semantic validity is based on sensitivity to the context of terms. Semantic validity was supported by the use of frequency and key-word-in-context listings and the semantic coherence resulting from using the entire text of each article

(Krippendorff, 1980). This close tie with the context of the literature is highly important in selecting representative key terms, constructing valid definitions, and delineating appropriate taxonomic relationships. Added support for semantic validity was the use of association profiles to develop the taxonomy and the use of frequency listings from the KWIC listings to couch the definitions in nursing administration terminology.

In sampling validity, the degree to which sampling procedures are unbiased is evaluated (Krippendorff, 1980). The sample was selected using a computer program based on a random number generator. The sample was considered valid if the assumption is correct that the four journals selected are representative of the nursing administration terminology in print.

Content validity is based on the match between the data and the content of the field. The use of a seven member panel to select the key terms provided content validity that the terms represented a valid sample of important terms in the literature of nursing administration.

Study Limitations

Jacox and Webster (1986) describe the uselessness and the deleterious effects of classification schemes that do not represent reality. With the methodology used the classification scheme is derived from the data and not from the preconceived notions of the researcher. However science is not value-free. It is impossible for the researcher not to bring personal values and concepts to bear on the work. There is always the potential for researcher bias (Mayr, Linsley & Usinger, 1953). In addition, the values and bias of the individual authors of the

articles in the data base may have obscured some terms and made others prominent. This threat was diminished because of the large number of authors (n = 482).

Due to the inanimate and archival nature of the data base, threats to validity such as maturation, interaction, timing, and mortality were not factors. However one threat to validity is the consistency of the researcher in implementing research techniques and routine decision points (Chenitz & Swanson, 1986). The large amount of tedious work involved had the potential to undermine efforts by the investigator to be precise and consistent, thereby affecting both validity and reliability. The repeated accuracy checks by computer programs and visual inspection helped maintain a precise, consistent effort. In addition, reviews by colleagues assisted in the precision and consistency.

Accuracy is difficult to determine because of the lack of a standard on which to base comparisons. Contributing factors to a bias in the literature are that the authors may not be experts on the subjects they address; some aspects of nursing administration may be emphasized at the neglect of others; or journal editors may select or reject articles based on criteria that do not reflect reality.

This study relied on nursing administration literature which may not represent some of the specialized terms in practice. In printed matter there is a filtered effect from the biases of the editors who select or reject manuscripts, from the authors who try to sense what type of topics will be accepted for publication, and from the influence of the audience which places more prestige on some topics than on others.

It is not claimed that the relationships explicated in this study represent a comprehensive structure of nursing administration. Neither is it claimed that there is a deliberateness in the structures discovered. What is suggested, however, is that, whether consciously or subconsciously, there is structure underlying what authors write; and this study was able to approximate the relationships in those structures as inferred from the terminology in publications. The study results produced general taxonomic insights. However, the work thus far only captures an approximation of the term relationships at one point in time. Nevertheless, the results have the potential to provide a beginning insight into term associations that may not have been apparent previously.

CHAPTER 4

FINDINGS

Introduction

In this chapter the findings are presented. First, the key domain terms are

listed followed by their characteristics including the proportion of multi-word

terms and the relative frequencies and distributions. Second, the 85-term lexicon

with definitions is presented in alphabetical order. Third, the taxonomy is

described and graphically presented.

The Key Domain Terms

The first study aim was to identify key terms of the nursing administration

lexicon as published its literature. The 85 key domain terms are as follows.

acuity	clinical practice	director of nursing
acute care	collaboration	discharge planning
ambulatory care	computer system	diagnosis related group
ancillary	continuing education	head nurse
autonomy	cost effectiveness	health care
care plan	critical care	health care organization
care unit	delivery system	health care system
case mix	direct care	home care
clinical nurse specialist	director	human resource

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implementation	nursing management	professional nurse
indirect care	nursing practice	professional nursing
information	nursing process	professional practice
information system	nursing research	prospective payment
job satisfaction	nursing resource	system
length of stay	nursing services	quality assurance
long-term care	nursing shortage	quality of care
medical record	nursing staff	recruitment
nurse administrator	nursing supervisor	reimbursement
nurse executive	nursing unit	retention
nurse manager	organizational structure	severity of illness
nurse practitioner	patient care	shared governance
nursing activity	patient classification	span of control
nursing administration	system	staff nurse
nursing care	patient day	staffing
nursing costs	patient outcomes	standard of care
nursing diagnosis	patient population	support services
nursing division	patient satisfaction	third party
nursing hours	primary nursing	turnover
nursing intensity	productivity	work environment

Over a third of the terms include "nurse" or "nursing." There are terms related to organization, production, distribution, evaluation, practitioners, organizational units, and individuals or clients. All the terms were in the frame of

reference. The distribution of the key terms throughout the frame of reference

provided evidence that they represented a reasonable cross-section of the field.

Of the 85 terms, 15% are single word terms, 70% are two-word terms, and

15% are three-word terms. Lemmatization, the work to identify and format

multiple forms of terms, affected 47% of the key terms.

The main statistical indicator used in identifying the key terms was

frequency of use. There were 4450 terms with a frequency of 10 or more. Figure

8 shows the frequency curve for the first 750 terms in the total frequency listing.

Figure 8. Frequency Curve for Term Frequency Listing
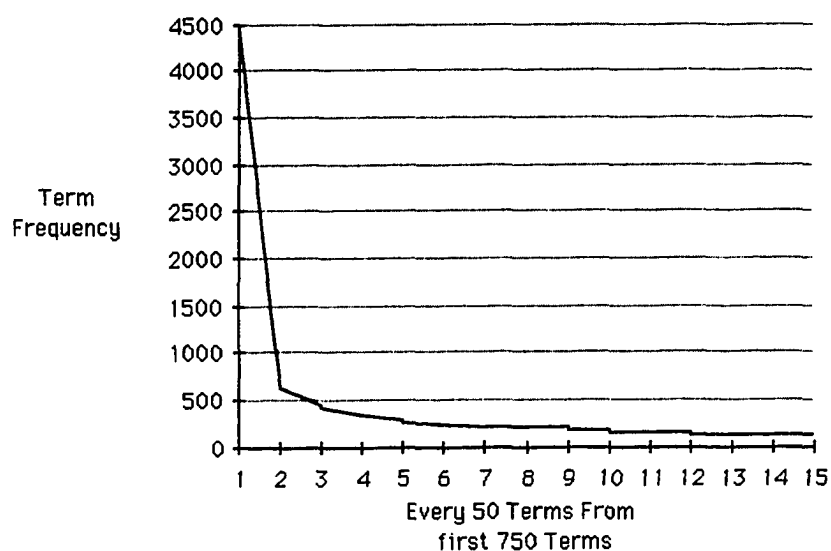
The frequency curve shows only about 130 terms had a frequency above

500. After a rapid descent, the curve levels off. In Figure 9, the frequency curve

of the 85 key terms shows a similarly shaped curve.

Figure 9. Frequency Curve for 85 Key Terms
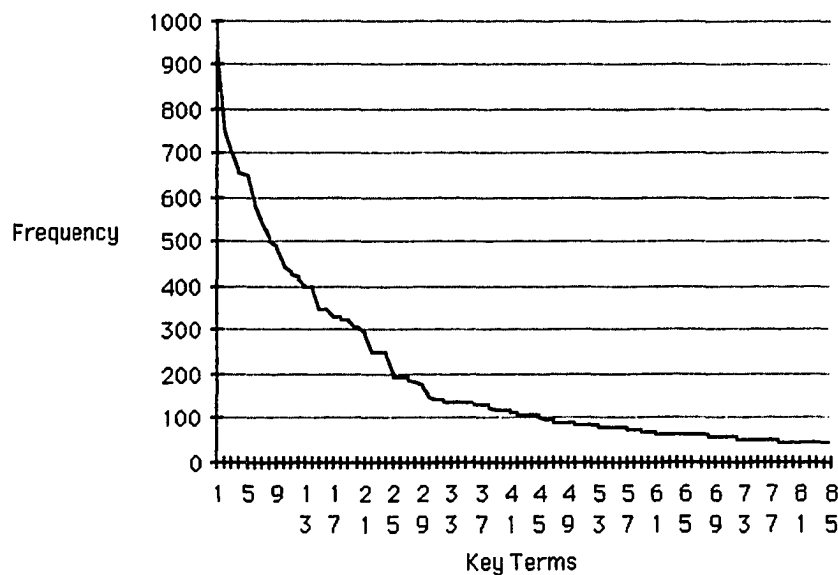
The first term in Figure 9 has a frequency of 936 as compared to 4445 for

the first term in Figure 8. Thus Figure 8 shows a steeper initial descent. The

similarity of the key term frequency curve with the total term frequency curve

suggests that the wide variety of frequencies in the key terms is a product of the

total frequency. In both cases there are few terms in the relatively high frequency

range. As the frequency list continues there is less difference between term

frequencies and more terms share the same frequency. For example, there are 22

terms that have a frequency between 1000 and 4445 but there are 1421 that have a

frequency between 10 and 19.

Since there are 4450 terms with a frequency of 10 or more an estimate of

the total number of terms in the data base can be made. Figure 10 shows the

shape of the frequency curve at the end of the frequency listing.

Figure 10. Frequency Curve of End of Frequency Listing
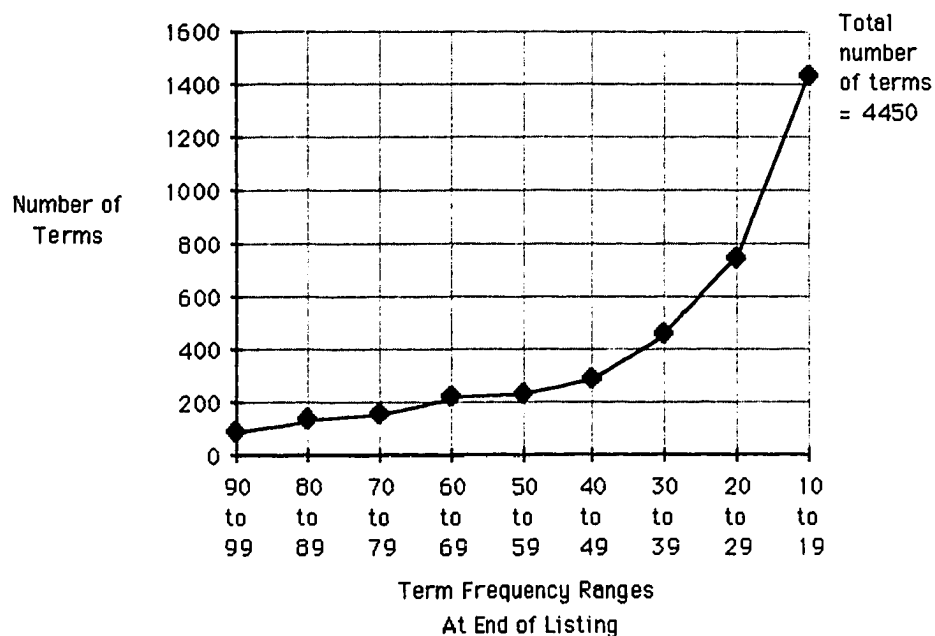
Considering the steep rise in the curve at the end, it was estimated that the total number of terms in the database was between 6500 and 8000. The lowest figure of 6500 was a conservative estimate given the angle of ascent. Figure 11 shows the curve extension used in this estimate.

Figure 11. Frequency Curve Extension

Term Frequency Ranges
At End of Listing
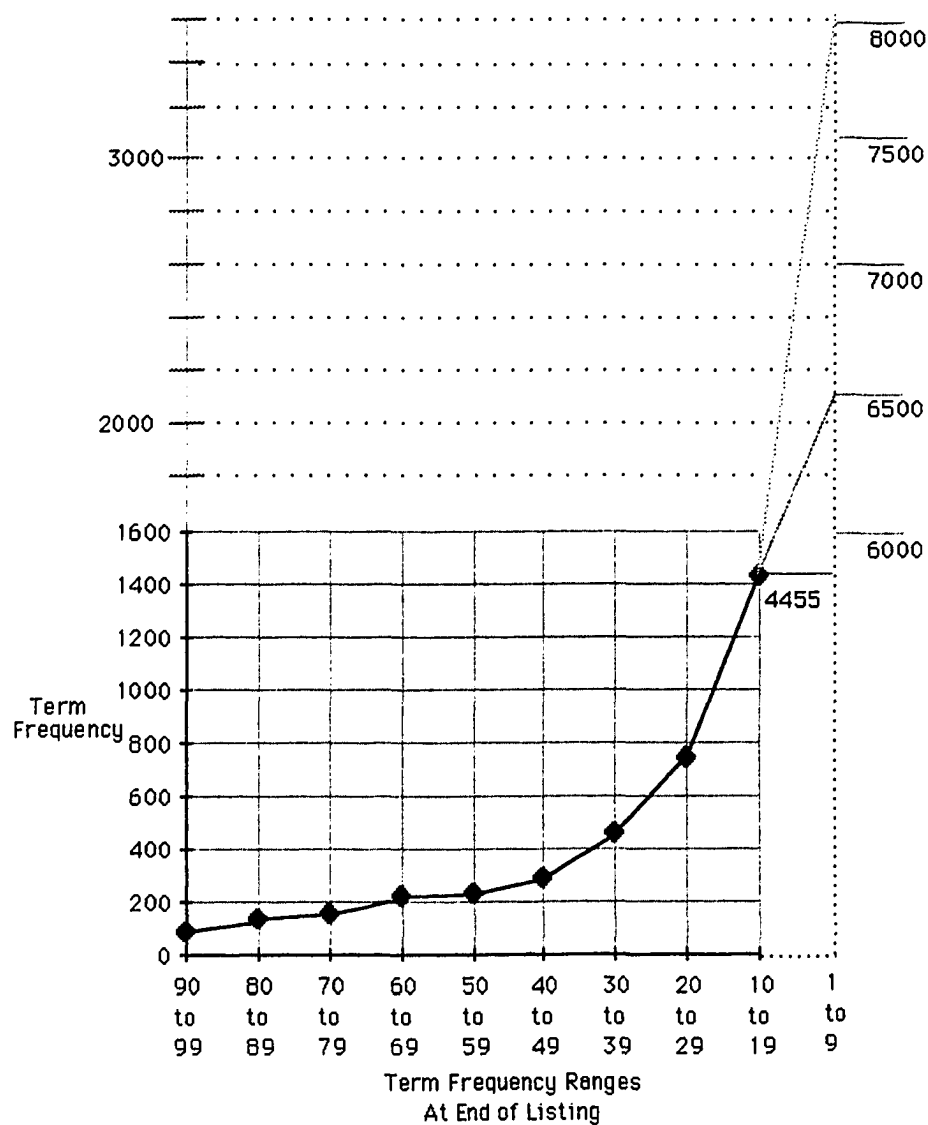
The final frequency listing was limited to the 1800 most frequent terms from which seven raters selected the 85 terms. The 85 terms were spread throughout the 1800. A graphic display of the selection pattern is seen in Figure 12.

Figure 12. Pattern of Key Term Selection by Frequency
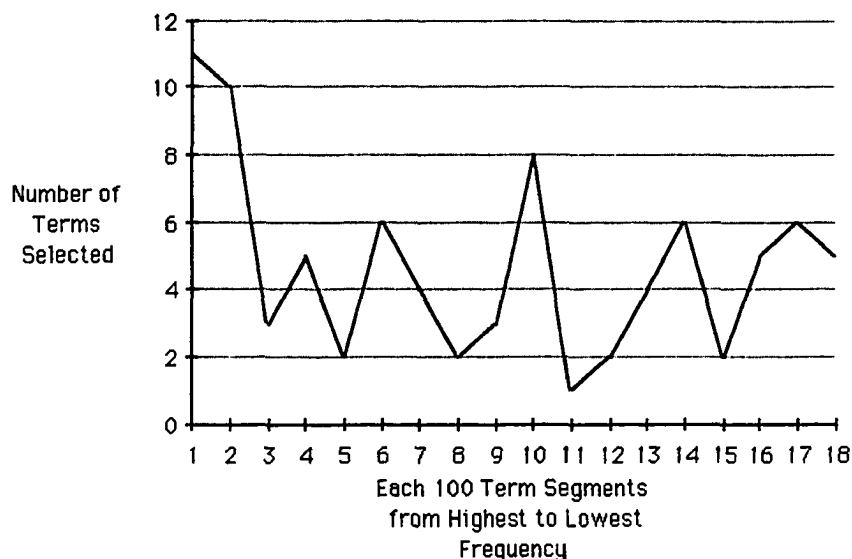
Using Pearson's Product Moment Correlation, there was a .368 correlation between the frequency of terms and the number of terms selected in each 100 term segment. This modest correlation shows the influence of overall term frequency but it was not as strong as anticipated based on the work of Goffman (1968). The 85 key terms did not cluster at the top of the frequency listings.

It cannot be claimed that the 85 key terms selected are the 85 most important terms to nursing administration. However, the combination of a frequency listing and expert opinion has produced a cross-section of terms that appear to be important to nursing administration and provide an initial listing of key terminology.

Frequencies and distributions are best expressed as ratios so they can be compared with databases of differing sizes. The frequencies for this study are

expressed as occurrences of each term per 100,000 terms. The distributions are

expressed in the number of articles per 100 articles in which a term occurs at least

once. Frequency reflects how much discussion centers around a term.

Distribution reflects how much a term is relevant to a range of discussions. As

would be expected, terms that have a high frequency tend to have a wide

distribution. The correlation between relative frequency and relative distribution

is .918 using Pearson's Product Moment Correlation. A notable exception was

the term "diagnosis related groups" which occurred in only 18% of the articles but

had a high frequency of use in those articles. The scatter plot in Figure 13 shows

the relationship of frequency to distribution and the location of the term

"diagnosis related groups" which is abbreviated "DRG."

Figure 13. Scatter Plot of Relative Frequency to Relative Distribution
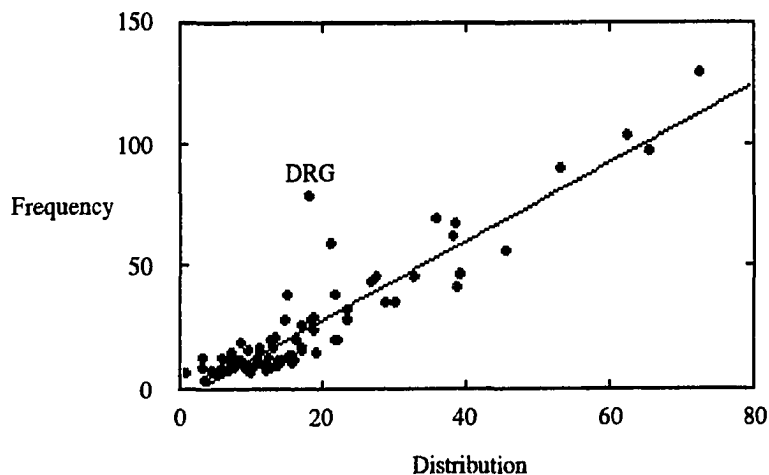
In descending order, the relative frequency of key terms per 100,000

terms is shown in Table 5.

Table 5

Key Terms Sorted by Relative Frequency

Relative Frequency	Key Term	Relative Distribution
129.1	information	72.5
102.8	health care	62.7
96.5	patient care	65.8
89.6	nursing care	53.5
78.3	diagnosis related group	18.3
69.4	nurse manager	35.9
66.8	staffing	38.7
61.4	staff nurse	38.4
58.8	nurse executive	21.5
55.1	nursing staff	45.8
46.5	implementation	39.4
45.7	head nurse	27.8
44.9	productivity	33.1
43.2	director	27.1
40.6	nursing service	39.1
37.8	clinical nurse specialist	15.5
37.7	length of stay	22.2
35.1	nursing practice	30.3
34.8	nursing unit	29.2
31.4	nurse administrator	23.6
28.4	patient classification syst.	19.0
27.7	director of nursing	18.7
27.5	turnover	15.1
27.2	reimbursement	23.9
25.9	acuity	17.3
23.5	quality assurance	19.0
20.0	job satisfaction	13.7
19.4	retention	13.0
19.3	autonomy	16.9
19.1	nursing administration	22.5
19.0	quality of care	22.2
18.6	nursing costs	8.8
16.7	professional nursing	17.6
16.5	patient day	11.6
16.5	primary nursing	13.4
15.2	care plan	11.6
15.2	recruitment	17.3
14.9	acute care	17.6
14.9	discharge planning	9.9
14.3	nursing research	7.4
14.3	professional nurse	19.4
13.6	nursing management	16.2
12.9	collaboration	15.8
12.2	ambulatory care	6.0
11.7	nursing process	11.3
11.6	critical care	12.7
11.6	nursing intensity	3.5
11.4	prospective payment syst.	14.1
11.3	care unit	16.5
11.2	ancillary	14.8
11.2	nursing hours	8.1
11.0	nursing activity	8.5
10.7	information system	7.0
10.7	nursing diagnosis	8.8
10.6	direct care	8.1
10.4	standard of care	11.3
10.1	patient population	14.1
10.0	delivery system	16.2
9.1	health care organization	10.9
9.1	nursing resource	12.3
9.0	support service	9.9
8.6	medical record	14.1
8.6	work environment	12.0
8.4	continuing education	9.5
8.4	health care system	13.0
8.4	patient satisfaction	7.7
8.4	shared governance	3.5
8.3	nursing shortage	9.9
7.8	professional practice	10.6
7.5	clinical practice	12.7
7.5	long term care	6.0
7.1	human resource	9.9
7.1	patient outcomes	9.9
7.0	nurse practitioner	6.0
6.8	nursing division	6.0
6.8	organizational structure	12.3
6.5	computer system	4.9
6.5	home care	7.0
6.2	nursing supervisor	6.0
6.2	span of control	1.1
5.9	case mix	6.0
5.8	indirect care	5.6
5.8	third party	10.2
5.5	severity of illness	4.9
3.0	cost effectiveness	3.9

The importance of the term "information" to nursing administration can be assumed from its high relative frequency and distribution. "Health care," "patient care," and "nursing care" are also high on the list for both frequency and distribution. "Staffing," "staff nurse," and "nursing staff" appear closely together. With the exception of "nursing supervisor," position titles appear in the top third of the list. "Job satisfaction" is in the top third of the list but "patient satisfaction" is in the bottom third. "Retention" has a higher frequency than "recruitment." "Information" is at the top of the list, "information systems" is in the middle, and "computer systems" is towards the end.

In descending order, the relative distribution of key terms per 100 articles is shown in Table 6.

Table 6

Key Terms Sorted by Relative Distribution

Relative Distribution	Key Term	Relative Frequency
72.5	information	129.1
65.8	patient care	96.5
62.7	health care	102.8
53.5	nursing care	89.6
45.8	nursing staff	55.1
39.4	implementation	46.5
39.1	nursing service	40.6
38.7	staffing	66.8
38.4	staff nurse	61.4
35.9	nurse manager	69.4
33.1	productivity	44.9
30.3	nursing practice	35.1
29.2	nursing unit	34.8
27.8	head nurse	45.7
27.1	director	43.2
23.9	reimbursement	27.2
23.6	nurse administrator	31.4
22.5	nursing administration	19.1
22.2	length of stay	37.7
22.2	quality of care	19.0
21.5	nurse executive	58.8
19.4	professional nurse	14.3
19.0	patient classification syst.	28.4
19.0	quality assurance	23.5
18.7	director of nursing	27.7
18.3	diagnosis related group	78.3
17.6	acute care	14.9
17.6	professional nursing	16.7
17.3	acuity	25.9
17.3	recruitment	15.2
16.9	autonomy	19.3
16.5	care unit	11.3
16.2	delivery system	10.0
16.2	nursing management	13.6
15.8	collaboration	12.9
15.5	clinical nurse specialist	37.8
15.1	turnover	27.5
14.8	ancillary	11.2
14.1	medical record	8.6
14.1	patient population	10.1
14.1	prospective payment syst.	11.4

13.7	job satisfaction	20.0
13.4	primary nursing	16.5
13.0	health care system	8.4
13.0	retention	19.4
12.7	clinical practice	7.5
12.7	critical care	11.6
12.3	nursing resource	9.1
12.3	organizational structure	6.8
12.0	work environment	8.6
11.6	care plan	15.2
11.6	patient day	16.5
11.3	nursing process	11.7
11.3	standard of care	10.4
10.9	health care organization	9.1
10.6	professional practice	7.8
10.2	third party	5.8
9.9	discharge planning	14.9
9.9	human resource	7.1
9.9	nursing shortage	8.3
9.9	patient outcomes	7.1
9.9	support service	9.0
9.5	continuing education	8.4
8.8	nursing costs	18.6
8.8	nursing diagnosis	10.7
8.5	nursing activity	11.0
8.1	direct care	10.6
8.1	nursing hours	11.2
7.7	patient satisfaction	8.4
7.4	nursing research	14.3
7.0	home care	6.5
7.0	information system	10.7
6.0	ambulatory care	12.2
6.0	case mix	5.9
6.0	long term care	7.5
6.0	nurse practitioner	7.0
6.0	nursing division	6.8
6.0	nursing supervisor	6.2
5.6	indirect care	5.8
4.9	computer system	6.5
4.9	severity of illness	5.5
3.9	cost effectiveness	3.0
3.5	nursing intensity	11.6
3.5	shared governance	8.4
1.1	span of control	6.2

The listing according to distribution was similar to the frequency listing. As noted "diagnosis related groups" was much lower on the distribution list. Other terms that were at least 20 positions lower on the distribution list than the frequency list included "clinical nurse specialist," "nursing costs," "nursing research," ambulatory care," "nursing intensity," and "shared governance." Terms that were at least 20 positions higher on the distribution list included "medical record," healthcare system," "organizational structure," and "third party."

Definitions of the Domain Terms

The 85-term lexicon is presented in the following section in a dictionary format. Throughout, the terms that are entry terms in the lexicon will be *italicized* for cross-referencing. The definitions are formatted as follows.

Entry term definition - first sentence is in the form of an ISA statement. **Example:** "quote from journal" After the citation the journal abbreviation is given since the bibliography is grouped by journal. **Synonym:** a close synonym is not in parentheses (parentheses mean a near synonym or an occasional use of the term as a near synonym) **Association Profile:** [the relative frequency of profile indicator terms in the order listed below per 100 occurrences of the entry term.] **Relative Frequency:** the number of occurrences per 100,000 terms. **Relative Distribution:** the number of articles containing the entry term, at least once, per 100 articles. {INI# the indexing

number if the entry term is found in the <u>International Nursing Index</u>. If the indexing number is in parentheses it is not the indexing term but is cross-referenced as a near synonym. If there are two or more indexing numbers, the term is found in the tree structure more than once.} ^

The profile indicator terms are: activity, care, clinical, costs, department, hospital, management, needs, nurses, nursing, patients, physician, problem, program, service, staff, system, time, unit, well, work.

acuity   A measure of the needs of patients, reflecting the time requirements for care . In hospitals, *patient classification systems* are used to assign *acuity* levels, which are used in determining the number, skill, and mix of personnel. The mix of nursing personnel includes aides, licensed practical nurses, RNs, and *clinical specialists*. *Acuity* data are also used for budget projections, personnel needs, and billing data. The influence of prospective payment has raised the average *acuity* in hospitals requiring more nursing time per patient and higher skill. The numbers used to designate *acuity* usually represent 7 to 9 general time requirement categories or actual time. One system uses an 80 point scale with each point representing 6 minutes of nursing time. **Example:** "Dissatisfaction and low morale were attributed to unfilled positions, problems with help form temporary agencies and the high *acuity* of illness" (Lee & Ericksen, 1990) (JONA). **Synonym:** (*acuity* level), patient *acuity*, (*severity of illness*). **Association Profile:** [2,7,1,9,2,7,1,7,9,8,50,2,2,0,3,6,6,

6,24,5,2] **Relative Frequency:** 25.9/100K **Relative Distribution:** 17.3/C {INI# } ^

acute care   Activities and services designed for patients whose pathology allows hospital in-patient status of a relatively short duration as opposed to long-term chronic care. With the introduction of the Medicare *prospective payment system*, considerable effort has been directed to finding ways to reduce the *length of stay* of *acute care* patients. *Healthcare* facilities are frequently distinguished by whether they provide services to *acute care* patients or long term patients. Some provide services for both. **Example:** "Reasons for the weekend increase in *acuity* may include: 1) patients with lower *acuity* were discharged on Friday, leaving more acute patients hospitalized during the weekend; 2) severely acute patients were admitted on the weekend; 3) intensive *care units* (ICUs) transferred patients to *acute care units* before the weekend, causing patients on the general medicine wards to be more severely ill" (Rosenbaum, Willert, Kelly, & Grey, 1988) (JONA). **Synonym:** short-term care. **Association Profile:** [0,11,0,0,2,49,0,7,13, 8,27,0,0,2,7,2,2,2,10,0,2] **Relative Frequency:** 14.9/100K **Relative Distribution:** 17.6/C {INI# } ^

ambulatory care   **1.** A department or area in a *healthcare* institution that provides services for out-patients, who are individuals not requiring hospital admission. *Nurse administrators* frequently manage these departments where they are responsible for budgeting, scheduling personnel, and monitoring the *quality of care*. Some procedures are now done in *ambulatory care*

departments that once required several days of hospitalization. **Example:**
"One major exception to the high rate of *turnover* was a new group of *nurse*
practitioners who were collaborating with physicians in *ambulatory care*
settings" (Armstrong, Eck, & Schuch, 1987) (NAQ). **2.** A nursing specialty
where the focus is out-patients. Nurses who give *ambulatory care* support the
ability of the patient to return to home the same day that medical or other
therapeutic interventions are provided. **Example:** "*Ambulatory care* can be
rotated with in-patient care in order to expose staff to patients who are in a
state of relative well-being" (Boland, 1990) (Nur Man). **Synonym:** out-
patient care **Association Profile:** [8,8,2,0,11,5,2,13,11,14,16,1,1,2,18,8,
5,7,1,1,1] **Relative Frequency:** 12.2/100K **Relative Distribution:** 6.0/C
{INI# E2.472.106+, (N2.421.589.148)} ^

ancillary   **1.** Services in *healthcare systems* that support the work of
physicians and nurses. Examples of *ancillary* services include pharmacy,
radiology, clinical laboratory, dietary, central supply, engineering, and house
keeping. **Example:** "Some of these systems allowed pharmacy, radiology,
laboratory, dietary, and other *ancillary* departments to receive orders from the
nursing units, and then return results by computer printout to be posted on the
charts" (McAlindon, Danz, & Theodoroff, 1987) (JONA). **Synonym:**
support services. **2.** Non-nursing personnel who work in health systems to
free nurses from non-nursing duties so they can provide *nursing care.*
Ancillary personnel are used to reduce *patient care* costs. **Example:** "As
RNs have become more costly and a scarce resource, *nursing care* delivery

models that rely less on RNs and more on other nurse and *ancillary* personnel

have regained popularity" (Glandon, Colbert, & Thomasma, 1989) (Nur Man).

Synonym: aides, nurse extenders. **Association Profile:** [3,9,5,14,38,16,

3,6,17,14,23,10,1,5,21,18,14, 1,10,4,5] **Relative Frequency:** 11.2/100K

Relative Distribution: 14.8/C {INI# } ^

autonomy 1. The relative state of freedom, independence, and discretion in

making decisions about patient's nursing needs, nurses' work, and *nursing*

practice . *Autonomy* is a characteristic of professional standing. *Autonomy*

depends on a defined *nursing practice* and acceptance by other *healthcare*

providers that nurses are responsible and accountable for that practice.

Autonomy in nursing is problematic, however, because nurses generally work

in organizations. Therefore, the degree of nursing *autonomy* is related to the

structure of the nursing organization and the methods and controls of care

delivery. Some research suggests that there is a direct relationship between a

nurse's perception of professional *autonomy* and *productivity*, *job satisfaction*,

absenteeism, and *turnover*. Increased *autonomy* brings with it increased

accountability. *Nurse administrators* balance ensuring quality care with

facilitating accountable, autonomous practice by nurses. **Example:**

"*Autonomy* or discretion is a measure of the freedom an employee has to

define his or her own tasks or projects, the methods or procedures used to

accomplish those tasks, how problems or exceptions will be handled, and what

criteria will be used to evaluate performance (Disch & Feldstein, 1986)

(JONA). 2. The right to make decisions concerning one's self such as the

patient's right of *autonomy*. **Example:** "Historically, the patient surrendered *autonomy* and the physician assumed power responsibility" (Fiesta, 1988) (Nur Man). **Synonym:** independence. **Association Profile:** [2,1,2,0,2,7,2, 7,41,8,4,6,3,1,2,5,2,2,4,1,20] **Relative Frequency:** 19.3/100K **Relative Distribution:** 16.9/C {INI# } ^

care plan   A formalized outline of nursing actions designed to meet the nursing needs of a patient. *Care plans* are based on standardized outlines or action or developed as customized plans for a patient's unique nursing needs. Changes are made in *care plans* as patient needs change. In some institutions, nursing diagnoses are central to the *care plan* with each *nursing diagnosis* followed by care strategies. *Care plans* that are not based on nursing diagnoses may include a list of patient problems and the treatment protocols for resolving the problems. Computer based systems have been developed to partially automate *care plans*. However, the final *care plans* are refined to fit the unique problems and attributes of each patient. Nurses have been reluctant to develop and update *care plans* viewing them as excessively time consuming and unessential. The Joint Commission on Accreditation of Healthcare Organizations in 1991 dropped the requirement for *nursing care plans*. **Example:** "The *care plan*, based on problems identified from the data base and updated as the patient progresses, is the pivotal point of the *delivery system*" (Costello & Summers, 1985) (Nur Man). **Synonym:** none. **Association Profile:** [2,5,0,0,0,10,0,3,28, 23,24,0,11,2,0,2,14,10,7,3,2] **Relative Frequency:** 15.2/100K **Relative Distribution:** 11.6/C {INI# } ^

care unit   A section of an institution or *health care delivery system* with

distinct boundaries or services. The term *"care unit"* is usually part of a

multi-word term naming a specialty area such as "intensive *care unit*,"

"coronary *care unit*," and "postanesthesia *care unit*." The specialty *care units*

are of particular interest to *nurse administrators* because of the comparatively

high cost to provide care for patients due to low patient to nurse ratios and

expensive, highly technical equipment. The nursing managers of special *care*

units are usually skilled as clinicians and managers. **Example:** *"Nurse*

administrators should thoroughly assess allocated and filled full-time

equivalents (FTEs) and credentials of nurses in the emergency department,

intensive *care unit*, operating room, postanesthesia recovery (PAR), and

medical/surgical units *to determine the impact of designation on nurse*

staffing" (Beachley & Snow, 1988) (JONA). **Synonym:** *nursing unit,*

nursing care unit **Association Profile:** [0,8,3,4,4,6,0,0,40,8,31,4,0,4,3,8,

0,5,37,0,4] **Relative Frequency:** 11.3/100K **Relative Distribution:** 16.5/C

{INI# } ^

case mix   The composition of a grouping of patients according to different

health problems and needs. The mix of patient cases is usually based on a

combination of medical diagnoses or *diagnosis related groups* (DRGs). *Case*

mix is a factor in determining the skill mix required to provide adequate care.

Nurse administrators match the mix of cases with the appropriate mix of

nursing personnel. If a *case mix* is predominantly ambulatory patients with

minor illnesses or few health problems, less expensive personnel such as aides

and licensed practical nurses are assigned. But if a *case mix* is the seriously ill
or those with many potential health problems, a personnel mix with a higher
level of skill is used. **Example:** "Monies in the future will probably be
allocated among hospital services according to DRG *case mix*" (Ethridge,
1985) (Nur Man). **Synonym:** none. **Association Profile:**
[2,2,5,5,0,24,7,2,5,15,27,2,2,0,12,0,17,0,0,5,2] **Relative Frequency:**
5.9/100K **Relative Distribution:** 6.0/C {INI# } ^

clinical nurse specialist (CNS)   A masters prepared practitioner with
advanced knowledge in such specialties as geriatrics, mental health, community
health, and pediatrics. *Clinical nurse specialists* assume a variety of roles
including program consultant, auditor of care delivery, coordinator of
specialized care, educator, *direct care* provider, researcher, and administrator.
The *clinical nurse specialist* may be in a staff position as an advisor with no
management authority or a middle management position with line authority.
Regardless of the role taken by a *clinical nurse specialist*, *collaboration* with
other nurses and physicians is integral to successful functioning. Some *clinical
nurse specialist* positions have vague parameters. Therefore, the *clinical nurse
specialists* develop their own roles, justify the costs and benefits, and establish
credibility. The inclusion of a *clinical nurse specialist* is weighed for its
beneficial effect on the *quality of care* and the cost. **Example:** "The problems
limiting the role of the *clinical nurse specialist* include: (1) role ambiguity, (2)
lack of support, (3) lack of legal basis for advanced practice and inappropriate
use of the title, (4) lack of authority, (5) resistance from *staff nurses*, (6) lack of

hard data to demonstrate worth, (7) encroachment on clinical time by teaching or administrative functions, and (8) competition from the *nurse practitioner* role" (Harrell & McCulloch, 1986) (JONA). **Synonym:** clinical specialist, nurse clinician, nurse specialist. **Association Profile:** [5,2,11,2,1,7,4,4,13, 13,14,2,8,4,13,8,2,12,6,1,1] **Relative Frequency:** 37.8/100K. **Relative Distribution:** 15.5/C {INI# (M1.526.485.650.600), (N2.350.630.180)} ^

clinical practice   The performance of *nursing care* activities for those who are ill or at risk of poor health. Nurses' *clinical practice* comprises a repertoire of knowledge, skills, and understanding of care. *Clinical practice* is based on observation, tradition, intuition, and scientific research and is regulated by legislation and institutional and professional standards. *Nurse managers* are administratively responsible to ensure the effectiveness of nurses' *clinical practice.* **Example:** "The new manager must be supported in protecting the time set aside for clinical experience, as time designated for *clinical practice* is easily eroded by other unit demands" (Werkheiser, Negro, Vann, Hostad, Byrd, & von Talge, 1990) (Nur Man). **Synonym:** (*nursing activities*), (*nursing practice*). **Association Profile:** [6,0,4,0,2,8,15,10, 15,21,2,2,2,4,6,4,4,10,4,6,2] **Relative Frequency:** 7.5/100K **Relative Distribution:** 12.7/C {INI# } ^

collaboration   The voluntary cooperation of two or more *healthcare* providers, in an atmosphere of mutual respect. Openness, security, and interpersonal skill are necessary for effective *collaboration.* The development of collaborative relationships with physicians is considered essential for the

effective delivery of health services and an important feature of the

professional development of nursing. As advocates for patients, nurses

occasionally take an adversarial position with physicians. The view held by

physicians that nurses should be handmaids who simply respond to orders has

been a major barrier to nurse-physician *collaboration*. **Example:** *"Nursing*

practice is enhanced and enriched through *collaboration* with other health

team members" (Behrend, Finch, Emerick, & Scoble, 1986) (JONA).

Synonym: none. **Association Profile:** [2,4,0,0,6,11,7,5,24,16,3,13,0,9,

11,6,0,0,3,3,0] **Relative Frequency:** 12.9/100K **Relative Distribution:**

15.8/C {INI# } ^

computer system An assemblage of automated interdependent components

designed to accept, manipulate, and return data. The component parts that

accept data are called input devices and include keyboard terminals, magnetic

tape and disks, modems, digital scanners, card readers, optical readers, light

pens, and voice recognition devices. The components that manipulate or

transform data are the electronic circuits and the instructions or programs that

determine how the data will be transformed. The component parts that return

data are called output devices and include video monitors, magnetic tape and

disks, modems, speakers, and printers. *Nurse administrators* work in an

information-rich environment and rely on *computer systems* to handle the

large volume of data required to efficiently organize, coordinate, monitor, and

evaluate *nursing care*. *Computer systems* can increase the volume and

decrease the calculation time of data processing; improve the timeliness of

information; reduce *indirect care* time for *staff nurses*; and provide complex calculations not possible or extremely expensive with manual data processing. *Computer systems* can be one-user, self-contained units called personal computers. They can also be multi-user, distributed-access units, called mainframe computers, in which the processing devices are in one location and the input and output devices are available at various locations. *Nurse executives* are increasingly dependent on access to mainframe computers for complex *information systems* that link departments, *support services*, and *nursing units*. *Nurse executives* use a *computer system* to aid in decision making, to provide timely financial and statistical data, to document decisions, and to communicate with others. Middle managers use *computer systems* to develop and monitor budgets, to calculate statistics on *quality of care*, and to track personnel data. First-line managers use *computer systems* to develop work schedules and document unit statistics. Nurses managing direct *patient care* use *computer systems* to order medications and supplies, to record charges for *patient care* items, to record patient *acuity* and to document *patient care*. **Example:** "To take advantage of what a *computer system* can offer requires a willingness to change all policies and practices that were originally devised to manage a manual system" (Schodt, Jackson, Borup, Balliram, & Swan, 1987) (Nur Man). **Synonym: none. Association Profile:** [11,0,4,6,11,13,2,7,18,11,0,2,0,0,2,7,20,4,4,4,0] **Relative Frequency:** 6.5/100K **Relative Distribution:** 4.9/C {INI# L1.700.568.80+} ^

continuing education (CE)   Learning opportunities provided by individuals,

healthcare facilities, and institutions of higher learning for improving

knowledge and skill on specific topics through classes, workshops, or

correspondence courses. *Continuing education* credits do not apply toward

university degrees but fulfill the requirements by some states for nurses to

receive a specific amount of *continuing education* credit over a specified

period of time to renew nursing licenses. Some institutions have *continuing*

education requirements. The purposes of *continuing education* include

providing nurses with currency of knowledge and supporting professional

growth. In contrast with in-service education, *continuing education* is

assigned credit hours, has tuition charges, is not normally attended while on

duty, and is not usually limited to participants from a single institution.

Example: "While it may be argued that participation in *continuing education*

does not lead to increased competency in practice, it still provides one of the

best methods available for increasing professional competency and growth"

(Milloning, 1985) (NAQ). **Synonym:** none. **Association Profile:** [26,0,

5,0,5,14,3,0,39,14,0,0,0,14,0,5,0,12,5,0,0] **Relative Frequency:** 8.4/100K

Relative Distribution: 9.5/C {INI# } ^

cost effectiveness   A measure of the value of a procedure, policy, program,

or piece of equipment in relation to the need, the desired outcome, and the

expenditure in money, time, and labor. Value may be based on a direct

financial return or a benefit. *Nurse administrators* use *cost effectiveness* as a

criteria for evaluating proposed programs, purchases, and changes in methods

of care delivery. *Cost effectiveness* analysis is complicated because there can

be many indirect benefits that are difficult to identify and determine the

monetary value. For example, if a child-care center were established for

employees' children would the increase in *job satisfaction* and decrease in

absenteeism compensate for a deficit between the center's income and

expenses? Major purchases, such as *information systems*, can cost several

million dollars so *nurse administrators* carefully evaluate the *cost*

effectiveness to justify the expenditure. If *nurse administrators* consider

changing *patient care* delivery from team care to primary care, the factors that

are evaluated include *patient satisfaction*, nurse satisfaction, *quality of care*,

average *length of stay*, and the efficient of use nursing time. **Example:** "With

a more specific measure, administrators could hold nurses accountable for the

services they deliver, evaluate the *cost effectiveness* of *nursing service*

programs and evaluate departmental budget variance" (Reitz, 1985) (Nur

Man). **Synonym:** cost-benefit analysis **Association Profile:** [0,10,5,14,

10,10,5,10,5,5,0,0,0,10,14,0,29,0,0,0,0] **Relative Frequency:** 3.0/100K

Relative Distribution: 3.9/C {INI# (N3.219.151.125)} ^

critical care   *Nursing services*, usually in a specialized organizational unit,

by nurses with specialty knowledge and skill. *Critical care* services are

provided to patients with a high *severity of illness*, a crisis condition, or a high

degree of complexity of *healthcare* needs. In *critical care* there is often a

distinct work culture with a specialized language pertaining to the technology

of cardiac and pulmonary monitoring using invasive techniques. The ratio of

nurses to patients is usually 1 to 1 or 1 to 2. *Critical care* nurses usually are granted a high degree of *autonomy* by *nurse managers* and physicians because decisions about care often must be made quickly to minimize risk or adverse outcomes. Special certification for nurses attesting to expertise in *critical care* is available. *Critical care* is an area of nursing where many resources are used for comparatively few patients. The high cost of *critical care* has implications for the distribution of health services since intensive measures to keep a few patients alive, regardless of their potential quality of life, could be otherwise used to prevent debilitating illnesses in many people and thus preserve for them a high quality of life for an extended period. *Critical care* is also an area where there are many ethical dilemmas because a patient can be artificially kept alive long after death would normally ensue and often longer than either the patient or patient's family wishes. *Nurse administrators* provide guidelines to assist *critical care* nurses in ethical decision making and provide support to help nurses cope with traumatic events. **Example:** "The complexity and *severity of illness*, the constant demands of near capacity use of all intensive *care units*, and the ever-increasing number and variety of intricate machines create challenging and exciting opportunities for nurses both in and out of *critical care* areas" (Armstrong, Eck, & Schuch, 1987) (NAQ). **Synonym:** (intensive care). **Association Profile:** [1,9,1,2,1,12,5,1, 41,18,18,4,2,1,2,2,5, 1,10,1,14] **Relative Frequency:** 11.6/100K **Relative Distribution:** 12.7/C {INI# E2.472.190+, N2.421.589.230+} ^

delivery system   *Healthcare* components, such as personnel, *information*,

support services, and materials, organized to provide and pay for services to a

population. Types of internal *delivery systems* for hospitals include

functional, team, total, and primary care systems. *Nurse administrators*

organize and manage *delivery systems* to be efficient and sensitive to the needs

and values of consumers but also to work within the constraints of

government regulation, the resources available, and patient needs. **Example:**

"The shortage of the century is providing an impetus to return to *delivery*

systems more tolerant of underdeveloped nurses" (Manthey, 1988) (Nur Man).

Synonym: *nursing care delivery system, healthcare delivery system, patient*

care delivery system, and *acute care delivery system.* **Association Profile:**

[0,7,0,3,4,10,0,9,20,28,13,4,4,3,7,6,7,3,0,3,0] **Relative Frequency:**

10.0/100K **Relative Distribution:** 16.2/C {INI# N4.490.374} ^

diagnosis related groups (DRGs)   A classification system of medical

diagnoses which is part of the *prospective payment system* developed to

control *health care reimbursement* costs for Medicare patients. Grouped in 23

major diagnostic groups, each of the approximately 470 medical diagnoses are

assigned a number of days Medicare will reimburse for hospitalization. The

goal is to reduce hospital *length of stay,* increase *productivity*, and thereby

lower *healthcare* costs. To delineate nursing's contribution to reimbursed

care, efforts have been made to determine the component *nursing costs* for

each *diagnoses related group* or analyze the relationships between *diagnoses*

related groups, nursing diagnoses, patient *acuity*, and hospital *length of stay.*

A method using relative intensive measures (RIMS) has been developed. This is a method to adjust the *reimbursement* for *diagnosis related groups* to the variation in *nursing intensity* requirements. **Example:** "We are paying special attention to identifying and measuring such aspects of patient *severity of illness* as the patient's physiological instability, need for teaching and emotional support, and factors within selected *diagnoses related groups* which influence complexity of nursing clinical care" (Prescott, 1986) (Nur Man). **Synonym:** none. **Association Profile:** [0,4,1,18,2,22,1,3,4,13,27,1,1,2, 4,0,5,3,5,2,0] **Relative Frequency:** 78.3/100K **Relative Distribution:** 18.3/C {INI# N2.421.589.473.100} ^

direct care   *Nursing activities* provided by practitioners and performed in the presence of an individual patient or family. Some institutions include as *direct care* the time spent away from the patient or family that is used to prepare for or complete *direct care*. *Nursing activities* are usually classified as *direct care*, *indirect care*, or nonproductive time. The usual distinction between *direct care* and *indirect care* is whether the activity is performed in the presence of the patient or family. Nonproductive time includes sick time and vacation time. *Patient classification systems* usually rely on an enumeration of *direct care* activities to calculate patient *acuity*. The manner in which *direct care* is performed is regulated by written *standards of care* for which *nurse administrators* are responsible. *Direct care* activities can be divided into independent and dependent *nursing care*. Independent direct *nursing care* is initiated by a nurse using nursing standards. Dependent *direct*

care entails activities initiated by someone other than a nurse, usually a

physician, but then performed by a nurse. Examples of independent *direct*

care are patient teaching, and prevention of bed sores. Examples of

dependent care are giving medications and restricting diets. **Example:**

"When examining unit-to-unit differences for the nurse aide job, analysts

found some units particularly low in *direct care* with corresponding high

scores in nonproductive time" (Rantz & Hauer, 1987) (Nur Man). **Synonym:**

direct *patient care*. **Association Profile:** [25,11,0,7,0,3,3,0,10,12,27,1,0,3,

12,5,5,34,10,5,1] **Relative Frequency:** 10.6/100K **Relative Distribution:**

8.1/C {INI# } ^

director   A title denoting a position in which a person is granted supervisory

responsibility over a department or a major subdivision in a hospital or

healthcare organization. The term *"director"* reflects the responsibility of one

who coordinates and controls the actions of others while they are engaged in

the production of care services. Nurses who are directors usually have such

titles as *Director of Nursing*, Nursing Director, Director of Nursing Services,

and Executive Director of Nursing. Other titles include Clinical Director,

Clinical Nursing Director, Director of Staff Development, and Special

Projects Director. **Example:** "During the first year the directors of nursing,

nurse managers, and the associate administrator/nursing worked with the

consultant to establish a strategic planning framework that focused on

professional and organizational goals" (Nash & Opperwall, 1988) (JONA).

Synonym: (administrator). **Association Profile:** [2,3,6,3,10,16,5,5,11,

48,5,5,3,10,7,8,4,5,6,2,3] **Relative Frequency:** 43.2/100K **Relative Distribution:** 27.1/C {INI# } ^

director of nursing A title given to the nurse who is administratively responsible for some or all *nursing services* in a *healthcare* institution. The title *"Director of Nursing"* may be the formal title given by the institution or a generic title for all heads of *nursing services* regardless of the formal title. Approximately 25% of the heads of *nursing services* have the title of *"Director of Nursing."* Other formal titles for the position include Vice-president for Nursing and Executive Director of Nursing Services. **Example:** "The role of the *director of nursing* is important to a *healthcare* institution because nursing is central to realizing the mission of an institution and because the combined skills of *clinical practice* and management critical to a well-run contemporary *healthcare organization* are increasingly present within the nursing organization" (Sample, 1989) (NAQ). **Synonym:** *nurse executive, vice-president of nursing.* **Association Profile:** [0,6,6,0,3,32, 6,12,15,26,6,5,6,6,16,13,9,8,17,6,3] **Relative Frequency:** 27.7/100K **Relative Distribution:** 18.7/C {INI# } ^

discharge planning The process of formalizing a schedule of sequential events anticipated for an episode of institutionalization to achieve a timely discharge, reduce overall hospital costs, and provide continuity of care from an institution to home, a nursing home, or an intermediate care facility. The importance of *discharge planning* has increased since the 1983 *implementation* of the Medicare *prospective payment system* that rewards

institutions for managing care so that patients are discharged in a relatively short period of time. *Discharge planning* involves interdisciplinary cooperation by physicians, social workers, nurses and other health professionals. It is generally accepted that the earlier *discharge planning* is begun, the better the results. Thus the usual goal is to begin *discharge planning* at least on the day of hospital admission or before admission. Preadmission *discharge planning* involves assessing patients before admission and making plans for a timely discharge. A *discharge planning* coordinator may be used to educate nurses and facilitate the *implementation* of the *discharge planning* process. **Example:** "Although studies on the effects of *discharge planning* on patient *length of stay* are not conclusive, all nurses probably can cite examples of patients who could have been discharged from the hospital had community resources been arranged, but due to the lack of early *discharge planning*, the patient was not discharged until these arrangements were complete" (Smeltzer & Flores, 1986) (JONA). **Synonym:** none. **Association Profile:** [6,7,2,3,4,19,0,9,18,10,35,0,7,24,7,4,3,8,4,5,3] **Relative Frequency:** 14.9/100K **Relative Distribution:** 9.9/C {INI# } ^

head nurse   A practitioner in a first-level management position who has 24-hour responsibility, usually for one *nursing care unit* in an organization. The domain of responsibility includes *nursing care*, patient teaching, personnel development, reporting, budgeting, evaluating, disciplining, and scheduling. The *head nurse* role varies by the type of governance, the traditions, philosophy, and goals of the institution, and the job description. Generally,

however, a *head nurse* is responsible for the *implementation*, coordination,

and evaluation of *patient care*. *Head nurses* are expected to implement and

monitor administrative plans and policies, inform *staff nurses* about changes

and alert them to policies. They represent patient and staff needs to the next

level of *nursing administration* and act as a resource to the *nursing staff*. The

main administrative duties for a *head nurse* include *productivity* of operations,

thorough resource personnel management, personnel development, and *quality*

of care evaluation. **Example:** "The ever increasing organizational demands

placed on *nursing service* administration require *head nurses* who are

competent in deploying organizational resources, both human and material,

and who share a real accountability for organizational performance" (Miller &

Heine, 1988) (Nur Man). **Synonym:** (*nurse manager*). **Association Profile:**

[5,3,6,1,6,19,5,5,11,8,6,1,3,3,4,13,4,5,24,3,5] **Relative Frequency:**

45.7/100K **Relative Distribution:** 27.8/C {INI# (N4.452.758.528)} ^

healthcare The services provided to individuals or communities to prevent

and treat health problems or to assist in normal physiological or psychological

development. *Healthcare* is provided in a variety of settings including

hospitals, nursing homes, clinics, professional offices, and homes.

Government policies and programs affect health standards, costs, and access

to health services. *Healthcare* is also influenced by technology and market

forces. Barriers for individuals seeking and acquiring *health care* include

finances, knowledge and beliefs, language, and access to services. **Example:**

"*Nurse administrators* and clinicians are frequently confronted with increasing

costs for *healthcare* and fewer resources with which to provide that care"

(Sherman, 1990) (NAQ). **Synonym:** *(nursing care)*, *(patient care)*.

Association Profile: [1,8,1,10,1,12,3,7,14,13,11,4,4,6,12,2,5,2,1,3,3]

Relative Frequency: 102.8/100K **Relative Distribution:** 62.7/C {INI# } ^

healthcare organization An institution in which medical and other health

related services are provided. A *healthcare organization* is a complex system

of diverse components including a physical plant and equipment, an

organizational infrastructure delineating authority and responsibility, various

groups of personnel with specialized expertise, and a cliental with health

needs. There are numerous types and sizes of *healthcare organizations*

representing the diversity of need, ownership, location, and economic

structure and strategy. Accrediting bodies, government policies, economic

conditions and personnel availability are among major external forces

influencing the functioning of these organizations. **Example:** "The recent

implementation of the *prospective payment system* for reimbursing hospitals

and the push for a more competitive environment among *health care*

organizations are forcing a massive reorganization in the *healthcare* industry"

(Becker & Foster, 1988) (Nur Eco). **Synonym:** *healthcare* institution

(nursing resources). **Association Profile:** [5,3,0,0,0,3,13,5,14,16,0,3,0,8,6,

3,5,3,0,0,5] **Relative Frequency:** 9.1/100K **Relative Distribution:** 10.9/C

{INI# } ^

healthcare system The complex, interdependent group of health-related

institutions, private corporations, public regulatory, and *reimbursement*

agencies that are involved in the provision of health services. Major

influences on the *healthcare system* are health needs, government legislation,

market forces, economic conditions, and societal expectations. The large,

highly specialized U.S. *healthcare system* is multi-tiered and characterized by

change and efforts to control costs. Nurses attempt to influence the allocation

of resources to attain a stable workforce and equity in compensation.

Example: "By recognizing the economic and professional advantages of

sharing resources and expertise, nursing education and service may gain

greater influence in the changing *health care system*" (Whitney, 1986) (Nur

Eco). **Synonym:** none. **Association Profile:** [0,3,0,13,0,5,0,3,27,9,6,0,

9,0,9,0,5,0,0,7,0] **Relative Frequency:** 8.4/100K **Relative Distribution:**

13.0/C {INI# } ^

home care   Health services provided in people's residence by professionals

or family. *Home care* is usually less expensive than hospitalization and

enables patients to remain in familiar surroundings. In spite of these

advantages, *home care* agencies were used only moderately until 1983 when

the Medicare *prospective payment system* was initiated and patients began

being discharged from *acute care* hospitals to home earlier than previously.

Some *home care* agencies are owned by hospitals and managed by nurses.

For *nursing administration*, the advantages of a hospital-operated *home care*

service is that nurses can be taught to work in both the hospital and *home care*

nursing services then shifted between the two as needed. Hospital discharge

planners can also more easily coordinate the transfer of patients from the

hospital to home. If the organization of care delivery is *primary nursing*, a

primary nurse can continue to care for patients after hospital discharge. The

technology used in *home care* has become increasingly sophisticated allowing

more seriously ill patients to be cared for at home. The use of complex

technology requires that nurses teach patients and family how to properly use

and care for technical devices such as those for peritoneal and hemodialysis,

parenteral nutrition, and oxygen therapy. *Home care* nurses also teach family

members how to care for patients when nurses are not there. *Nurse*

administrators obtain Medicare certification to obtain *reimbursement* for

home care services. *Home care* nursing provides more freedom and better

hours than hospital nursing and has become popular with nurses. A unique

service provided by *home care* nurses is hospice care for the terminally ill.

Home care nurses also assist patients in obtaining durable medical equipment

(DME) such as wheel chairs and walkers. **Example:** "Some hospitals with

home care programs are cross-training their *nursing staff* so that the patient's

primary nurse can follow the patient from hospital to home" (Sovie, 1985)

(Nur Eco). **Synonym:** none **Association Profile:** [4,22,2,2,2,49,2,9,42,

7,27,4,0,13,27,0,4,2,2,2,9] **Relative Frequency:** 6.5/100K **Relative**

Distribution: 7.0/C {INI# (E2.472.611.470), N2.421.143.524.470+),

(N2.421.533.320+)} ^

human resources   The pool of nursing personnel that is available to a

healthcare organization or system. *Human resources* are viewed as a

valuable asset to an institution. A department of *human resources* in a health

system supports *nursing administration* in recruiting, interviewing, placing, and retaining nurses. For *nursing administration*, interpersonal relations, labor relations, and personal conduct are concerns of the *human resource* management. *Human resource* management at the unit level includes patient assignment, scheduling work time, and monitoring personal conduct. The basic principle of *human resource* management is to have available an adequate supply of personnel with appropriate qualifications, training, and experience to appropriately care for clients but not an over-supply which could burden the organization financially. **Example:** "Organizations, such as hospitals, faced with relatively high *turnover* among employees often must evaluate the effectiveness of three *human resource* programs: *recruitment*, orientation, and *retention*" (Wise, 1990) (Nur Eco). **Synonym:** personnel **Association Profile:** [4,2,8,4,6,16,24,4,2,16,0,2,0,10,12,8,4,2,10,6,0] **Relative Frequency:** 7.1/100K **Relative Distribution:** 9.9/C {INI# } ^

implementation   Carrying out a plan or policy. *Implementation* is the third step in the *nursing process* -- assessment, planning, *implementation*, and evaluation of care. *Implementation* usually includes a beginning time, a time frame for completion, and steps for completion. *Implementation* is the action oriented component of a plan. Changes in procedures, programs, projects, and systems require *implementation*. There are two types of plans involved in implementing change--plans for the desired change and strategies for *implementation*. *Information systems* and health deliver systems are complex and change may not be very easy for nurses accustomed to an old system.

Nurse administrators plan *implementation* strategies carefully to ensure that complex systems or programs are successful. Even relatively simple changes may be ignored by busy nurses without careful administrative plans. The production of *nursing care* is dependent on a continuous cycle of planning and implementing short and long-term plans. *Nurse administrators* consider the cost of policy *implementation* in order to justify activities. **Example:** "Regardless of the quality of the system selected, its successful *implementation* is dependent on the approach and support available during the installation process from internal resources and the vendor" (Ginsburg & Browning, 1985) (JONA). **Synonym:** none. **Association Profile:** [2,1,4,3,4,7,5,3,7,12,4,2,3, 11,3,11,12,5,6,2,2] **Relative Frequency:** 46.5/100K **Relative Distribution:** 39.4/C {INI# } ^

indirect care The actions that nurses perform away from the presence of patients or their families. Examples of *indirect care* are documenting care, ordering supplies, planning for discharge, consulting, and reporting. The ratio of direct to *indirect care* varies by specialty, the nature of the care delivery method, physical environment, and *support services. Nurse administrators* attempt to design the *work environment* to maximize the time spent with patients and thus reduce the amount of *indirect care* and nonproductive time. Some nursing personnel are considered *indirect care* providers: these include unit clerks, unit managers, *head nurses*, and *clinical nurse specialists*. **Example:** "In a recent study in a Southwestern hospital, the average *indirect care* per patient for all units was determined to be 39 minutes per day"

(Deines, 1985) (Nur Man). **Synonym:** indirect patient care. **Association**

Profile: [40,5, 5,13,0,5,2,2,8,0,18,0,0,0,0,8,0,25,12,5,2] **Relative**

Frequency: 5.8/100K   **Relative Distribution:** 5.6/C {INI# } ^

information   Knowledge in a transmittable form of facts in a context. *Nurse*

administrators rely on high quality *information* to make appropriate decisions

about situations or programs which they cannot review and evaluate first-hand.

Sometimes managers make decisions based on incomplete or marginally

relevant *information. Nurse administrators* strive to develop efficient

information systems that provide relevant and reliable *information* that is easy

to retrieve, understand, and use . They balance the costs and benefits of

collecting, processing, storing, and protecting *information.* Some *information*

is essential and other *information* is too costly for its value. Timely

information in a useable format is essential if each segment of the health

system and intersectoral linkages are to be effective. Intelligent, long-term

planning, as well as daily decision-making, are dependent on having an

adequate supply of *information* that is available when needed and is valid,

uniform, and neither too detailed nor overly aggregated. The quality of an

information system used by *nurse administrators* determines the usefulness,

accuracy, timeliness, economy, and comprehensiveness of the *information*

provided. Identification of the most useful representation of the substantive

information is essential to focus attention on what is important and to develop a

clear understanding of the complex nature of administration. See *information*

system. **Example:** *"Quality of care* is closely tied to each *healthcare*

provider's and manager's ability to find, assimilate, and process staggering

amounts of *information*" (Mowry & Korpman, 1987) (Nur Eco). **Synonym:**

none. **Association Profile:** [3,2,2,3,4,8,4,7,12,7,15,3, 3,4,3,5,7,5,5,2,3]

Relative Frequency: 129.1/100K **Relative Distribution:** 72.5/C {INI# } ^

information system   An assemblage of interdependent component parts and

rules to collect, process, store, distribute, protect, and interpret data. The main

goal of *information systems* is to improve efficiency by monitoring the

performance of critical indicators. *Nurse administrators* manage complex

dynamic organizations in which capturing, processing, and interpreting

information is essential. To administer a nursing department and understand

the nature of problems, *nurse administrators* determine what data and

information are relevant and how best to capture the data. They are also

responsible for determining the most efficient and informative representation

of the data and how to design an *information system* that will provide timely

accurate data, and how to protect the confidentiality and safety of the data.

Approximately one quarter of the operating costs of the *nursing services* is

information handling. Therefore *nurse administrators* strive to implement

information systems that increase the *productivity* and efficiency of personnel.

Because of this, manual *information systems* in the *nursing services* are being

replaced by automated ones. Automated systems vary from personal

computer-based systems with limited functions to mainframe-based hospital

information systems (HISs). These latter link departments and units

throughout a hospital and provide decision support, billing, patient

documentation, *staffing*, and other functions. Nurses work in an *information-*

rich environment. High levels of *productivity* are dependent on reliable

information systems that process large amounts of *information* and provide the

right *information* in the right form at the right time. The right form of data

means that the data is easy to retrieve and understand. Types of *information*

systems include hospital information systems (HISs), medical information

systems (MISs), and nursing information systems (NISs). **Example:**

"Because 60% to 80% of a hospital's operating costs are personnel costs, a

well-designed *information system* can best reduce costs by enhancing

personnel *productivity*, preforming functions once executed by people so that

the same work can be accomplished in less time or by fewer people" (Mowry

& Korpman, 1987) (Nur Eco). **Synonym:** none. **Association Profile:**

[4,3,18,11,4,14,7,5,12,8,15,1,3,1,0,8,15,3,4,3,3] **Relative Frequency:**

10.7/100K **Relative Distribution:** 7.0/C {INI# N4.452.515} ^

job satisfaction   The relative state of contentment with the professional and

personal conditions of employment. Nurse administrators have focused on *job*

satisfaction because of its probable affect on morale, *productivity*, work

quality, absenteeism, and *turnover* rates. Studies of *job satisfaction* have

mainly focused on the nature of nurses' *job satisfaction* and, to some degree,

the effect of *job satisfaction* on personnel and *patient outcomes*. *Job*

satisfaction is enhanced by a perception of receiving fair treatment and a good

match between expectations and work conditions. A main indicator of low

job satisfaction is absenteeism. **Example:** "Furthermore, the environment

could be modified to enhance work excitement in nurses with increased
patient satisfaction, a positive effect on *patient outcomes*, and increased *job satisfaction* with decreased *turnover* and absenteeism as potential consequences" (Simms, Erbin-Roesemann, Darta & Coeling, 1990) (Nur Eco). **Synonym:** none. **Association Profile:** [0,2,0,2,0,8,7,5,26,4,6,1,2,2,1,11, 1,1,5,3,7] **Relative Frequency:** 20.0/100K **Relative Distribution:** 13.7/C {INI# F1.145.76.747.150, F2.784.692.425} ^

length of stay (LOS) A measure, in units of whole days, of the time in a *healthcare* facility. Indicators of potential *length of stay* include medical diagnosis, patient *acuity*, patient age, co-morbidities, preadmission *discharge planning*, preoperative screening, treatment technologies, *quality of care*, and complications. A key statistic for *nursing management* is the average *length of stay* for specific *patient populations* or patients in a diagnostic category. A number of medical diagnoses have two *diagnosis related groups*. One is for individuals below 70 years of age and the other is for those older than 70 in anticipation that those over 70 will have a longer *length of stay*. **Example:** "Hospitals can no longer admit patients, do whatever they want to do to them, keep inpatients as long as they want, and charge them or their *third party* payer whatever the traffic will allow, even if the patient's extended *length of stay* is caused by the hospital's error or lack of planning" (Misner & Biskey, 1989) (NAQ). **Synonym:** (*patient days*). **Association Profile:** [0,5,1,10,1, 24,0,3,6,5,48,3,1,5,3,2,3,4,11,1,1] **Relative Frequency:** 37.7/100K **Relative Distribution:** 22.2/C {INI# N2.421.589.473.593} ^

long-term care   Activities and services designed for patients with chronic

illness or advanced age. The major focus of the U.S. *healthcare system* is

short-term *acute care*. Health professionals tend to focus on acute pathologies

and short-term treatments. Health insurance for *long-term care* is not easily

obtained. With the increasing average age of Americans, the need for access

to and payment for *long-term care* of an acceptable quality is also increasing.

Example: "*Long-term care* of the elderly is demanding, yet it is looked upon

by some nurses and other health professionals as simply custodial care rather

than true nursing" (Pfaff, 1987) (Nur Man). **Synonym:** (chronic care)

Association Profile: [0,13,2,2,0,17,0,8,13,2,8,2,10,2,38,0,15,0,12,0,2]

Relative Frequency: 7.5/100K   **Relative Distribution:** 6.0/C   {INI#

E2.472.276, N2.421.589.581} ^

medical record   A permanent legal document for each patient receiving

services in a *healthcare organization*. A *medical record* is used as a working

document during treatment and as an historical one after discharge from an

institution. As a working reference, the *medical record* is a vehicle for

communication among members of the *healthcare* team. It provides a basis

for planning care and enhances continuity of care. *Nurse administrators* use

medical records to audit the *quality of care* and utilization of services. *Nurse*

administrators also review *medical records* for completeness of

documentation and to justify charges. *Medical records* provide data for other

types of statistical evaluations such as patient profiles and trends in illnesses.

Because *medical records* are legal documents, *nurse administrators* provide

orientation programs and in-service training concerning proper documentation and confidentiality. **Example:** "Isolation of *nursing costs* also implies that patients and third-party payors would be able to seek verification that *nursing care* for which they were charged actually was received and documented in the *medical record*" (Trofino, 1989b) (Nur Man). **Synonym:** chart. **Association Profile:** [0,5,0,3,8,8,0,0,7,12,51,12,2,3,12,3,15,8,2,3,0] **Relative Frequency:** 8.6/100K **Relative Distribution:** 14.1/C {INI# N4.452.859.564} ^

nurse administrator   A nurse in a management role at the first, middle, or executive level who is responsible for the organization, operation, and evaluation of *nursing care* and for the environment in which the care is given. *Nurse administrator* refers to the top *nursing service* executive, to members of the central management team, or to any nurse that supervises. The first use is the most common. The term "*nurse administrator*" usually describes a role rather than a title, therefore a *nurse administrator*'s title may be *Director of Nursing*, Vice-President for Nursing, *Nursing Supervisor, Patient Care* Coordinator, *Head Nurse*, or Charge Nurse. **Example:** "*Nurse administrators* of urban hospitals are likely to attract nurses through a campaign that advertises nationally and markets toward young, single, baccalaureate prepared nurses who may be interested in continuing their education and seeking job promotion" (Whaley, Young, Adams, & Biordi, 1989) (JONA). **Synonym:** (*director of nursing*), (*nurse executive*), nursing administrator. **Association Profile:** [0,7,2,4,3,9,3,8,17,6,7,0,3,3,7,5,3,3,2,3,3] **Relative**

Frequency: 31.4/100K   **Relative Distribution:** 23.6/C {INI# N2.350.630.60} ^

nurse executive   The top ranking member of the *nursing administration* team and responsible for the *nursing services* and, in some hospitals, *support services* such as pharmacy and central supply. The usual titles for *nurse executives* are *Director of Nursing* and Vice-President for Nursing. The *nurse executive* position is considered demanding because of the complex and dynamic nature of *healthcare organizations*, the high expectations of physicians and hospital administrators, and the vulnerability of patients and nurses. Most *nurse executives* rely on computer *information systems* and decision support systems to track the complex operations, control costs, and to ensure that high quality and low liability characterizes the care delivered. A *nurse executive* is responsible for the largest group of employees in a hospital and is concerned with the supply, dependability, and quality of the nursing personnel. Obtaining the highest qualified nurses is a major responsibility but educating and training nurses to ensure high standards of practice is equally important. Good communication skills are important in dealing with personnel, patients, guests, physicians, administrators, and union representatives. Delegating, negotiating, collaborating, and diplomacy skills are also necessary because *nurse executives* are responsible for the single largest cost-center of a hospital. Knowledge of *healthcare* finances is a requisite in developing and maintaining budgets, managing cost distributions, and justifying expenditures for personnel, programs, and equipment.

Identifying the nurses' contributions to *productivity* of an institution is important in justifying the resource requirement of nursing. The *nurse executive* customarily has graduate level education and experience as a practicing nurse. Most are women who are younger than 50 years of age. **Example:** "To respond to urgent *healthcare* needs and to shape the future of *nursing care* delivery, the *nurse executive*s who are most effective are also heavily involved in financial planning, market analysis for new program development, and long-range agenda setting with community leaders, board members, and hospital administrators" (Moore, Biordi, Holm & McElmurry, 1988) (JONA). **Synonym:** *director of nursing*, vice-president of nursing. **Association Profile:** [3,2,2,2,3,16,5,7,8,9,2,2,2,9,3,4,3,5,1,2,4] **Relative Frequency: 58.8/100K Relative Distribution: 21.5/C {INI# (N2.350.630.60)} ^**

nurse manager   A member of the *nursing management* organization who is directly responsible for the day-to-day operation of one or more organizational units which, in hospitals, are usually called *nursing unit*s or *patient care unit*s. A major responsibility is handling problems and disseminating *information* about patient problems and the allocation of personnel. *Nurse managers* frequently provide leadership during a crisis, for example, when a patient experiences sudden heart failure. Time is spent obtaining and maintaining personnel, material, and *information* resources, acting as a motivational resource for *staff nurse*s, and integrating the work of the *nursing unit* into the institution's operational systems. *Nurse managers* also handle conflict, plan

for change, and develop the skills of those under their direction.
Baccalaureate education is usually expected for *nurse managers* but a master's
level education is preferred. Examples of titles for *nurse managers* are *Head
Nurse*, Unit Director, and House Supervisor. **Example:** "*Nurse managers* are
under continuing and escalating pressure to balance quality *patient care* with
cost effectiveness" (Williamson & Johnson, 1988) (Nur Man). **Synonym:**
(*head nurse*), nursing manager. **Association Profile:** [4,4,6,1,4,7,9,9,14,
8,5,1,4,5,4,11,6,7,9,3,3] **Relative Frequency:** 69.4/100K **Relative
Distribution:** 35.9/C {INI# (N2.350.630.60)} ^

nurse practitioner   A registered nurse with specialized training from a
diploma or masters level education program who is licensed to provide
primary *health care*. The first *nurse practitioner* program began in 1965.
Nurse practitioners are licensed in every state of the U.S. There is
considerable discussion about the role and scope of practice of *nurse
practitioners* who are sometimes viewed as competition for physicians or
clinical nurse specialist. The term "*nurse practitioner*" can be confusing since
all nurses are practitioners. However the term is restricted to those who have
formally been granted the title by virtue of their education. *Nurse
practitioners* often function under the direct or indirect supervision of a
physician. Physicians have accepted *nurse practitioners* with mixed reactions.
Some physicians have used them to enhance their *productivity* and earnings.
Others have mounted strong efforts to limit or eliminate the competition from
nurse practitioners. An oversupply of physicians fosters the latter negative

view. A major goal among *nurse practitioners* is to qualify for direct third-party *reimbursement.* **Example:** "In hospitals that employ *nurse practitioners* to function essentially as house staff, it is common practice for *nurse practitioners* to take admission histories and do physical examinations on patients" (Jacox, 1987) (NAQ). **Synonym:** none. **Association Profile:** [2,2,2,4,2,12,0,0,23,10,10,25,6,10,8,4,4,2,0,2,6] **Relative Frequency:** 7.0/100K **Relative Distribution:** 6.0/C {INI# M1.526.485.650.640, N2.350.630.487} ^

nursing activity   A complementary series of direct and indirect actions performed by nurses and labeled as one entity. Two examples of direct *nursing activities* are "changing dressings" and "suctioning." Two examples of indirect *nursing activities* are "ordering supplies" and "collaborating with a physician about a patient's care." *Nursing activities* are the core of clinical *nursing practice. Nurse administrators* develop standards to guide and monitor these activities for quality, personnel safety, and cost. Nurses are expected to document their activities in a patient's *medical record* as evidence that appropriate action has been taken. The amount, in time not number, of *nursing activities* is directly related to the *acuity* of patients. *Quality of care* may be viewed as the relationship between desired and actual *nursing activities.* **Example:** "The aim of the department's *nursing staff* was to evaluate the nursing needs of the outpatient department by identifying all *nursing activities*, their frequency, and the percentage of direct and indirect nursing time they consumed" (Joseph, 1990) (JONA). **Synonym:** (*clinical*

practice)(*nursing practice*). **Association Profile:** [9,12,0,3,16,7,0,12,5,8,

28,4,3,0,3,0,4,7,8,4,0] **Relative Frequency:** 11.0/100K **Relative**

Distribution: 8.5/C {INI# } ^

nursing administration **1.** The process of organizing, producing,

distributing, and evaluating the resources required to provide care given to

patients by nurses. **Example:** "Microcomputers can be a key factor in getting

that *information* and probably will become a pervasive part of *nursing*

administration . . ." (Finkler, 1985) (JONA) **2.** A sub-field of nursing in

which the focus is on resources, organizational units, *delivery systems*,

management, and results in terms of costs and benefits. A department of

nursing administration is usually headed by a nurse with a graduate degree in

either nursing or business. *Nursing administration* position titles include

Director of Nursing, Assistant Director of Nursing, Quality Control Director,

Discharge Planning Director, Division Director, *Nursing Supervisor*, and

Head Nurse. The roles of *nurse administrators* include leader, collaborator,

director, coordinator, evaluator, decision maker, and arbitrator. **See** *nurse*

administrator, nurse executive, and *nurse manager*. **Example:** "Every day,

after all patients have been evaluated and all reliability studies performed, the

information stored in the bar code scanners is transmitted electronically to a

centralized microcomputer located within the offices of *nursing*

administration" (Boyer, Corbett, & Janson, 1986) (Nur Man) **Synonym:**

(*nursing management*). **Association Profile:** [4,3,2,5,7,9,1,7,13,16,

6,2,2,7,3,8,5,2,6,5,0] **Relative Frequency:** 19.1/100K **Relative Distribution:** 22.5/C {INI# (N4.452.758.377.750)} ^

nursing care The health service activities provided by nurses or auxiliary nursing personnel to individuals with health needs and problems. *Nursing care* is individualized for each patient through the *nursing care* process. *Staff nurses* manage daily care by identifying *patient care* needs, setting priorities, and organizing their time to deliver safe, quality care. *Nursing care* is divided into *direct care* or *indirect care*. The need for *nursing care* is the prime reason for hospital admission. For hospital *nursing units*, the methods of organizing the delivery of *nursing care* include functional, team, primary, and total nursing. *Nurse administrators* are concerned about the quality, intensity, and cost of *nursing care* and with supplying adequate personnel, resources, *support services*, and administrative assistance. The accurate identification of *nursing care* costs and ways to reduce these costs are of concern. Patient *acuity* systems group patients according to levels of *nursing care* time requirements and assist in distributing the workload evenly. **Example:** "There is a lack of consideration of variables that affect *nursing care* in addition to *patient care* needs and staff mix, including nursing *delivery systems*; philosophy, missions, and standards of the institution; physicians' practice patterns; physical plant; and *support services*" (Sherman, 1990) (NAQ). **Synonym:** (care), (*patient care*), (direct *patient care*), (*healthcare*). **Association Profile:** [4,9,1,13,4,12,2,12,19,14,34,3,3,2,4,5,7,6,11,3,1]

Relative Frequency: 89.6/100K **Relative Distribution:** 53.5/C {INI#
E2.472.611+, N2.421.533+} ^

nursing costs   Expenses incurred for services performed by nurses. Total
nursing costs are usually subdivided into direct and indirect costs but some
formulas include non-productive time such as vacation time, sick time, or
education time. Traditionally, *nursing costs* in hospitals have been recovered
in the daily room rate charged for each patient. Thus precise delineations of
nursing costs were considered unnecessary. Factors that have influenced
efforts to delineate nursing's share of the costs have included: 1) the need to
show nursing as a revenue producer rather than only as an expense, 2) the
need to justify the inclusion of *reimbursement* for *nursing services* in
prospective payment formulas, and 3) an effort to include nursing as an
itemized entry in variable billing systems. *Nursing costs* for nursing
departments are influenced by the *length of stay*, the intensity of care required
for each patient, the different types of nursing personnel used to care for
patients, the wage/salary structure of institutions, the efficiency level that
support systems enable nurses to achieve, and the *nursing care* delivery
system used. **Example:** "This is the first step in a process required to
unbundle *nursing costs* from room costs and make *nursing care* a discrete
identified service provided to patients in varying amounts, dependent on
needs" (Sovie, Tarcinale, Vanputee, & Stunden, 1985) (Nur Man). **Synonym:**
none. **Association Profile:** [0,0,0,22,2,18,2,5,3,20,11,0,0,0,5,2,7,3,3,2,2]
Relative Frequency: 18.6/100K **Relative Distribution:** 8.8/C {INI# } ^

nursing diagnosis   A description of a health condition or altered life process that nurses can legally and independently treat. The formalization and standardization of nursing diagnoses have been largely under the influence of members of the North American Nursing Diagnosis Association (NANDA). *Nursing diagnosis* is not universally accepted in nursing and not used in many institutions. If *nursing diagnosis* is used in an institution, *nurse administrators* provide inservice and education programs for nursing personnel to improve their understanding of the diagnoses and their use. Nursing diagnoses are frequently documented and prioritized in a patient's *care plan* along with the nursing interventions and expected *patient outcomes*. Examples of nursing diagnoses are "alterations in comfort: acute pain," "ineffectual family coping related to family violence," and "self-care deficit related to inability to bathe self." **Example:** "Because these specific responses change from day to day, the *nursing diagnosis* is likely to change more rapidly and more often than the physician's diagnosis" (Smejkal & Hill, 1990) (JONA). **Synonym:** (nursing assessment). **Association Profile:** [3,4,5,0,0,0,0,8,24,26,9,4,14,0,0,0,15,0,3,3,3] **Relative Frequency:** 10.7/100K   **Relative Distribution:** 8.8/C   {INI# (N4.590.233.508.480+)} ^

nursing division   The component part of a hospital organization that is managed by nurses who are responsible for all or the majority of *nursing activities*. In hospitals a *nurse executive* heads the *nursing division* and is usually a peer of other division administrators for the financial and medical services. *Nursing division* position titles include *Staff Nurse*, Charge Nurse,

Head Nurse, Nurse Supervisor, Unit Director, Program Director, Assistant *Director of Nursing*, and *Director of Nursing*. **Example:** "The Vice President of Nursing assumed primary responsibility for the project and organized task force of volunteers from the management and clinical leadership staff of the *nursing division*" (Tonges, 1989) (JONA). **Synonym:** nursing department. **Association Profile:** [15,2,2,0,17,13,2,6,4,6,4,0,0,6,2,9,6,0,6,2,2] **Relative Frequency:** 6.8/100K **Relative Distribution:** 6.0/C {INI# } ^

nursing hours A calculation of the anticipated or actual hours spent in patient centered activities. Calculations may be made from nursing and physician orders or from a combination of census and patient *acuity* data. *Nursing hours* can be calculated by patient, unit, program, division, or institution. Hours of care may be used to determine patient charges in a variable charging system, to guide decisions on the number of nurses to schedule, or to develop budgets. *Productivity* is reflected by the relationship between the calculated *nursing hours* required and those actually provided. Required hours are influenced by the needs of the patient and the technologies, procedures, and treatment modalities in use. Because of the labor intensive nature of *health care* delivery, *nursing hours* are affected more by *length of stay* than other variables. It is important for *nurse managers* to effectively manage *nursing hours* so that the care activities performed are appropriate, efficient, and goal directed -- the goal being a satisfactory patient outcome in the shortest time. **Example:** "The most challenging aspect of managing *nursing resources* is determining the average *nursing hours*

required per *patient day*" (Kirby, 1986) (Nur Eco). **Synonym:** care hours, hours of care, (hours per *patient day* (HPPD)), *nursing care* hours, (*nursing hours* per *patient day* (NHPPD)), *nursing intensity*. **Association Profile:** [0,4,0,10,0,8,0,3,8,8,37,0,0,0,0,4,5,0,10,0,0] **Relative Frequency:** 11.2/100K **Relative Distribution:** 8.1/C {INI# } ^

nursing intensity A quantitative measure of the anticipated or actual time needed to care for a patient or a group of patients, for example those that share the same diagnosis. *Patient classification systems* are used to group patients according to *nursing intensity* and are the basis for determining levels of *nursing intensity*. The relationship between *nursing intensity* and *diagnosis related groups* is a frequent focus of research studies in which the goal is to understand the factors within and between *diagnosis related groups* that influence *nursing intensity*. With governmental efforts to decrease the average length of hospital stay of patients in all categories and the trend for increased *acuity* of patients in institutions, *nursing intensity* increases. *Nursing intensity* is directly related to *nursing costs*. **Example:** "*Nursing intensity* variation within DRGs is an important issue, closely related to variations in patient complexity" (Cromwell & Price, 1988) (Nur Eco). **Synonym:** *nursing hours*. **Association Profile:** [0,6,0,15,0,14,0,5,6, 11,14,0,2,0,0,0,2,0,0,4,0] **Relative Frequency:** 11.6/100K **Relative Distribution:** 3.5/C {INI# } ^

nursing management **1.** The process of planning, implementing, supervising and evaluating *nursing practice*, personnel, and policies.

Example: "Involving the staff in decision making and listening to their suggestions are two keys to successful *nursing management*" (Sovie, 1985) (Nur Eco). 2. A sub-field of nursing in which the focus is on the appropriate and efficient use of human and material resources. The work of *nursing management* includes implementing new policies and programs as determined by the *nurse administrators*; supervising the work of *staff nurses*; managing crises and unexpected events; ensuring the availability of needed services, supplies, and personnel; projecting fiscal needs by designing budgets; and enhancing communication between providers and consumers. The goal of effective *nursing management* is to provide quality care at an acceptable cost. *Nurse managers* develop strategies to monitor and maintain *productivity* under changing circumstances. While some nurses without a college degree are offered management positions, most *nurse administrators* expect *nurse managers* to have a minimum of a baccalaureate degree but prefer nurses with a master's degree. Advanced course-work in finance, management, leadership, resource management, and organizational communication are valuable for *nurse managers*. *Nursing management* position titles include *Head Nurse*, Nurse Supervisor, Unit Director, Program Director, and Program Coordinator. See *head nurse, nurse manager*. **Example:** "The *nurse administrator* is responsible for guiding the *nursing management* team to consider entire systems and not just isolated problems" (Jones & Ortiz, 1989) (NAQ). **Synonym:** (*nursing administration*). **Association Profile:** [3,2,2,4,2,11,4,6,5,16,9,2,3,6,3,18,13,2,15,4,1] **Relative Frequency:** 13.6/100K **Relative Distribution:** 16.2/C {INI# N4.452.758.377.750} ^

nursing practice   The activities for which nurses are licensed and that are

supported by nursing's ethical and philosophic traditions, a body of

knowledge, and institutional policies. Activities may be grouped according to

specialty categories such as psychiatric *nursing practice* and according to

independent and dependent actions. Independent actions are those initiated by

a nurse, such as patient education. Whereas dependent activities are those

initiated by others, primarily physicians. *Nursing practice* changes to reflect

changes in health, society, and technology. Society grants professional

authority to nurses to establish standards for practice and to maintain

autonomy in regulating *nursing practice* including granting and revoking the

license to practice. **Example:** "Nursing theorists generally agree that *nursing*

practice is an intellectual governed body of activities which form a distinct

public human service concerned with individuals' health status and

functioning" (Reitz, 1985) (Nur Man). **Synonym:** (nursing activity),(clinical

practice). **Association Profile:** [3,6,4,1,3,15,3,3,22,18,10,3,4,3,2,3,5,4,3,3,12]

Relative Frequency: 35.1/100K **Relative Distribution:** 30.3/C {INI# } ^

nursing process   A systematic problem-solving approach to identify nursing

and *healthcare* needs, plan activities to address those needs, implement the

plan, evaluate effectiveness, and feed back the *information* from the

evaluation to refine or revise future plans. Nurses at all levels use the *nursing*

process in solving *patient care*, management, and administrative problems.

The use of the *nursing process* helps practitioners individualize care and

document *nursing practice* clearly. **Example:** "The *nursing process* has been

accepted as the very core of nursing; it is viewed as a practical nursing tool, an educational tool, and as an important means for developing nursing as a scientific discipline" (Curtis & Simpson, 1985) (JONA). **Synonym:** none. **Association Profile:** [2,10,6,0, 0,5,2,6,16,31,17,4,6,4,0,6,2,0,2,6,4] **Relative Frequency:** 11.7/100K **Relative Distribution:** 11.3/C {INI# N4.590.233.508} ^

nursing research Formalized inquiry related to the provision of *nursing care*, services, and systems. Research priorities include problems related to health and *nursing care delivery systems*. Some hospitals have a *nursing research* committee and employ nurse researchers. *Nurse administrators* are responsible for establishing *nursing research* programs and promoting the development and application of knowledge. The *nurse executive* role also includes providing adequate resources for research, providing a degree of *autonomy* to maintain scientific integrity, and ensuring that findings are evaluated for safety and their potential value. A *nursing research* committee may function to set goals for research; evaluate published findings, and implement findings. The committee also reviews research proposals to ensure the protection of human subjects and scientific merit. **Example:** "Although increasing numbers of *nursing service* departments are hiring nurse researchers, questions continue regarding the *nurse executive*'s role in fostering the climate in which nursing studies can be conducted and *nursing research* findings can be applied to practice" (Simms, Price, & Pfoutz, 1987) (Nur Eco). **Synonym:** (nursing studies). **Association Profile:** [8,0,5,2,8,

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3,0,6,21,26,1,0,4,46,6,8,0,5,0,4,2] **Relative Frequency:** 14.3/100K

Relative Distribution: 7.4/C {INI# N4.590.233.508.613} ^

nursing resources   The supply of personnel, time, knowledge, and skill

available within specific time, place, and budget parameters. *Nursing*

resources are managed by *nurse administrators* who anticipate demand, use

allocation systems, monitor utilization, and design methods of care delivery

with attention to efficiency and effectiveness. Acquiring adequate *nursing*

resources is a critical task when there is an insufficiency of available nurses.

The *retention* and *recruitment* of staff are important in maintaining adequate

nursing resources. The consumption of *nursing resources* is related to the

degree of *nursing intensity* and reflected in *nursing costs*. The utilization of

nursing resources per diagnosis related group varies widely, thus presenting

difficulties in demonstrating the contribution of nursing to *prospective*

payment system reimbursement dollars. **Example:** "Strategic planning for

designing, developing, and using nursing *information systems* to provide

quality *patient care* with decreasing *nursing resources* will be the challenge of

the decade" (Woolery, 1990) (JONA). **Synonym:** *(human resources)*,

(personnel). **Association Profile:** [0,5,0,3,3,16,8,15,6,19,24,0,0,0,3,3,14,5,

6,0,11] **Relative Frequency:** 9.1/100K **Relative Distribution:** 12.3/C

{INI# } ^

nursing service(s)   The *nursing activities* that are available or provided to

patients in hospitals and other institutions by a system comprised of *staff*

nurses, *nurse managers*, and *healthcare* technologies. The product of hospital

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nursing services is *patient care* and, when appropriate, family care. *Standards of care* and an institution's philosophy and traditions shape the *nursing services*. Because of the demands for fiscal accountability, priority has been given to accurately determine the component costs of *nursing service*, to efficiently and systematically identify these costs for patients, and to nurses' being fairly compensated. **Example:** "It is this business mind which has led to a shift in emphasis for many nursing departments--a shift from a goal-driven concept of *nursing services*, to a resource-driven model; a shift from, quality at all costs, to how much quality can be given with the resources" (Kramer & Schmalenberg, 1987) (Nur Man). **Synonym:** *nursing care* services. **Association Profile:** [3,3,2,16,9,16,5,9, 14,17,10,2,2,4,10,4,8,4, 5,2,2] **Relative Frequency:** 40.6/100K **Relative Distribution:** 39.1/C {INI# N4.452.442.422.989, N2.421.539, N2.278.354.422.489} ^

nursing shortage An insufficient supply of personnel for the demand for nurses A *nursing shortage* affects a *nurse administrator*'s ability to provide adequate services. Suggested causes of institutional shortages include insufficient *recruitment* and *retention* efforts, inadequate *support services*, and poor quality supervision. External causes include new career opportunities for women in fields previously not open to women; opportunities for nurses to diversify into new areas outside of *health care* institutions; the need for higher levels of expertise for higher *severity of illness* and increased complexity of care requirements; and the fear of AIDS. **Example:** "Hospitals may seek to relieve the *nursing shortage* through improved compensation and benefits,

appropriate nurse-patient *staffing* ratios, and adequate working conditions" (Harrison, 1987) (Nur Eco). **Synonym:** none. **Association Profile:** [0,0,0,4,0,32,0,5,54,12,7,0,7,0,0,5,0,7,0,0,4] **Relative Frequency:** 8.3/100K **Relative Distribution:** 9.9/C {INI# } ^

nursing staff   Any aggregate of personnel providing *patient care*. *Nursing staff* are referred to, for example, as the "hospital *nursing staff*," the "*nursing staff* on the oncology unit," and the "*nursing staff* on night shift." *Nursing staff* comprise the largest number of personnel in most *healthcare organizations*. They are not part of the formal administrative structure. The work of the *nursing staff* is classified as *direct* and *indirect care*. The mix of *nursing staff* refers to the number and ratio of nurses aides, licensed practical nurses, RNs, and *clinical nurse specialists*. The staff mix is determined by the availability of personnel, the organization of care delivery, and patient *acuity*. A *patient classification system* is often used to determine the number, level, and mix of *nursing staff*. Most *nursing staff* are hired to work on a specific hospital unit. However *staff nurses* are often asked to care for patients on other units if there is a need for their services. **Example:** "As the *nursing staff* gained knowledge and confidence, members presented more complex and diversified *patient care* problems to the *clinical nurse specialist*" (Everman, 1985) (Nur Man) **Synonym:** nursing personnel, staff. **Association Profile:** [5,4,5,2, 5,16,4,8,11,9,17,5,3,5,5,9,4,7,8,1,3] **Relative Frequency:** 55.1/100K **Relative Distribution:** 45.8/C {INI# M1.526.485.680+, N2.350.661+} ^

nursing supervisor   The *nurse manager* who is responsible for coordinating

patient care activities for a single work shift for 24 hours a day. A *head nurse*

coordinates *patient care* on a single unit but the *nursing supervisor* usually

coordinates the care on several units and, in small hospitals, may coordinate

care for all the units providing services, especially during evenings and nights.

Nurse supervisors assign nursing personnel. Providing adequate personnel for

all units, ensuring the delivery of safe care, and providing expert advise are

among the key duties. *Nursing supervisors* are usually responsible on

evening, night, or weekend shifts. Although they supervise personnel, they

usually do not schedule for the long-term or hire personnel. **Example:**

"*Nursing supervisors* receive reports for their particular units and a total house

report" (McNeilly, 1987) (Nur Man). **Synonym:** (nurse manager).

Association Profile: [0,2,5,0,0,9,7,12,39,9,9,7,2,0,2,12,2,0,9,0,7] **Relative**

Frequency: 6.2/100K **Relative Distribution:** 6.0/C {INI#

N4.452.758.528} ^

nursing unit   A physical or organizational area of a *healthcare* institution

distinguished by the *nursing service* provided or by the type client. Renal

dialysis, surgical recovery, or rehabilitation units represent several types of

specialty services. On *nursing units*, unit names such as pediatric oncology,

labor and delivery, or medical unit indicates the type of patient customarily

treated. A *nursing unit* is an entity or level in the *organizational structure*

usually with a budget, manager, personnel, and reporting requirements.

Example: "Despite methodological differences, recent studies support the use

of a valid and reliable *patient classification system* to link nursing resource

consumption to the cost of providing *nursing services* within specific *nursing*

units" (Benedict, Gemmell, & Anderson, 1988) (NAQ). **Synonym:** *care unit,*

nursing care unit. **Association Profile:** [2,5,2,10,7,14,7,2,8,12,15,1,2,2,2,

6,9,5,12,1,1] **Relative Frequency:** 34.8/100K **Relative Distribution:**

29.2/C {INI# } ^

organizational structure   The formal line and staff arrangement of positions.

An *organizational structure* delineates formal lines of authority, responsibility,

and communication. An *organizational structure* is usually portrayed in a

diagram showing a hierarchical arrangement of the major organizational units

with the individuals or groups who have the greatest authority and

responsibility at the highest point. Those at the same level are considered as

having approximately equal authority and responsibility. A key aspect of an

organizational structure is the *span of control* which indicates the number of

subordinates. Organizations that are more centralized concentrate decision

making and authority in a key positions. Those that are decentralized distribute

decision making and authority further down the hierarchy. *Shared governance*

usually entails decentralizing an *organizational structure.* Matrix

*organizational structure*s are characterized by multiple cells or organizational

units in which personnel have overlapping lines of responsibility and authority.

Example: "Nurses must be able to exercise accountability within a supportive

organizational structure" (Porter-O'Grady, 1987) (Nur Eco). **Synonym:**

(hierarchy) **Association Profile:** [4,2,4,4,6,9,4,2,9,19,2,0,2,13,4,4,2,2,9,2,9]

Relative Frequency: 6.8/100K **Relative Distribution:** 12.3/C {INI# } ^

patient care The health service activities provided to individuals with health needs and problems. *Patient care* is sometimes used as synonymous with "*nursing care.*" However, *patient care* is any service received whether from nurses, physicians, or other *healthcare* professionals. A multidisciplinary approach to *patient care* is valued because of the complexity of people's *healthcare* needs. Nurses coordinate the *patient care* on *nursing units* and manage the *nursing care* component. *Patient care* is characterized by planning, use of resources, therapeutic interventions, and evaluation of the effectiveness of care. In hospitals, nurses provide the majority of *patient care*. *Nurse administrators* monitor *patient care* for quality, effectiveness, and cost. **Example:** "Ultimately, hospital and nursing systems could be integrated to yield a single, comprehensive, patient-specific data base for use in planning, executing, and controlling the delivery of *patient care* services within the hospital" (Boyer, Corbett, & Janson, 1986) (Nur Man). **Synonym:** (care), (*healthcare*), (*nursing care*). **Association Profile:** [7,6,3,6,2,14,8,12, 24,10,14,5,5,4,7,8,7,8,8,3,3] **Relative Frequency:** 96.5/100K **Relative Distribution:** 65.8/C {INI# } ^

patient classification system (PCS) A formalized method of grouping hospitalized patients by the amount of time required to meet their *nursing care* need requirements. Patient classification data are used to develop personnel budgets, to determine the appropriate number, skill level, and mix of nursing

personnel, and to equitably distribute the work load. Numerous *patient classification systems* are in use in hospitals. Some *patient classification systems* use an ordinal raking system with several categories, while others assign points to each patient along a continuum. **Example:** "A fully operational *PCS* will provide *information* that can be used for shift-to-shift *staffing*, patient assignments, *case mix* analysis, budget preparation and defense, identifying per patient cost of *nursing services*, variable patient billing and maintenance of *quality assurance* standards" (De Groot, 1989) (JONA). **Synonym:** *acuity* system, classification system, (patient classification). **Association Profile:** [3,6,2,4,1,14,4,5,4,13,18,0,3,2, 1,8,13,4,4,5,2] **Relative Frequency:** 28.4/100K   **Relative Distribution:** 19.0/C {**INI#** } ^

patient day   A measure of hospital usage. *Patient day* data are used to statistically describe the *patient care* provided by an institution. *Patient days* are usually based on the number of full or partial days a patient stays or the number of patients at a specific time each day. *Nurse administrators* use data about *patient days* in a number of formulas to monitor care. The number of *patient days* per unit of time reflects the average occupancy rate and the volume of work. Tracked on a monthly basis, *patient days* can show seasonal trends in occupancy. Medication errors are frequently reported by the number of errors per 1000 *patient days*. *Nursing costs* per *patient day* is used to evaluate the efficiency of *patient care delivery systems*. *Nursing hours* of care per *patient day* is used to develop budgets, validate *patient classification*

systems, and track trends in patient *acuity* and unit *productivity*. **Example:** "When *patient days* are reduced by 5% and *nursing hours* per *patient day* are similarly increased, the costs remain constant or drop slightly" (Kirby, 1986) (Nur Eco). **Synonym:** (length of stay). **Association Profile:** [0,7,0,5,1,9, 0,3,4,8,21,0,0,0,7,7,2,6,30,0,0] **Relative Frequency:** 16.5/100K **Relative Distribution:** 11.6/C {INI# } ^

patient outcomes The results or health status of individuals following a program of care. There are no standardized criteria for measuring *patient outcomes*. Nursing and medical interventions are related to *patient outcomes*. The criteria used in some institutions to evaluate the *quality of care* and *patient outcomes* include number of nosocomial infections, number of patient injuries, medication errors, need for pain relief, knowledge about condition, *acuity* level at the time of discharge form the institution, length-of-stay, level of *patient satisfaction*, and number of readmissions in a specified time. **Example:** "The National Center for Health Services reported that *patient outcomes* arise from multiple determinations that are influenced by all disciplines" (Curtis & Simpson, 1985) (JONA) **Synonym:** none. **Association Profile:** [6,10,2,0,0,6,0,10,31,16,14,14,2,4,0,4,8,6,2,4,4] **Relative Frequency:** 7.1/100K **Relative Distribution:** 9.9/C {INI# } ^

patient population A group of individuals that share one or more characteristics and are either under the care of health professionals or potentially so. The features, needs, and trends of *patient populations* are studied to determine requirements and changes that will improve care based

on specific needs. The increase of the average age of hospitalized patients and the increase in the average *acuity* for *nursing care* are two trends in the U.S. *patient population. Patient population*s can be described by demographics such as gender, race and nationality; by pathology; or by location such as community, institution, and *nursing unit. Nurse administrator*s study the characteristics of potential patients in their community to project the demand for services and to plan marketing strategies. *Nurse administrator*s also gather data on *patient population*s with similar needs to design methods of improving *patient care* and nurse *productivity.* **Example:** "The initial step is to identify the most salient factors influencing the *nursing care* of the ambulatory *patient population* and the scheduling practices of a given clinic" (Hoffman & Wakefield, 1986) (JONA). **Synonym:** (patients). **Association Profile:** [6,16,3,0,3,19,3,26,17,9,11,4,6,6,9,11,4,7,20,7,1] **Relative Frequency:** 10.1/100K **Relative Distribution:** 14.1/C {INI# } ^

patient satisfaction   The relative state of contentment by the recipient of care services with the quality of services and the environment of care. *Patient satisfaction* is an outcome or a result-of-care indicator often used in patient surveys by *nurse administrator*s to evaluate and improve the quality of *nursing services. Patient satisfaction* surveys are usually conducted using mailed questionnaires after patients are discharged from a hospital. Nurses engender *patient satisfaction* by their timely response to nursing and health problems, appropriate communication and interventions, and social courtesy. Nurses play a significant role in *patient satisfaction.* **Example:** "The problem

was validated by our *patient satisfaction* survey, which directed our attention
to the timeliness of responses to the call light and lack of attention to
amenities" (Sheedy, 1989) (JONA). **Synonym:** none. **Association Profile:**
[3,14,3,0,3,24,0,5,16,10,30,0,3,9,16,10,5,3,5,3,3] **Relative Frequency:**
8.4/100K **Relative Distribution:** 7.7/C {INI# (N4.452.822.360} ^

primary nursing A decentralized care *delivery system* in which each nurse
is assigned the total *nursing care* of a patient and has responsibility, authority,
and accountability for the full range of *nursing care*. A commitment beyond
each eight hour shift is basic to most *primary nursing* systems. Primary
nurses follow the full course of a patient's illness, coordinate care 24 hours,
and may be contacted during off-hours for advice. The strength of *primary
nursing* is the trust that patients develop in having consistent care providers
and nurses' thorough knowledge about the patients under their supervision.
Drawbacks include the probable higher costs and the degree of isolation that
some nurses experience. Primary nurses are also a liaison between an
institution and family members. **Example:** "The task force identified a
number of inefficiencies in our operations under *primary nursing*: lengthy
shift reports which delayed *patient care* and increased overtime; lengthy
delays for emergency and recovery room admissions whenever the assigned
nurse was off the unit; excessive time required to locate patient records for
routine charting; time-consuming calls to physicians to report patient x-ray
and laboratory results; excessive time required nurses to run errands, to
transport patients, to carry specimens to the lab as well as trips to the

pharmacy, and to escort patients out of the hospital upon discharge" (Bennett
& Hylton, 1990) (Nur Man). **Synonym:** none. **Association Profile:**
[3,15,0,4,0,4,3,2,38,11,26,4,0, 2,4,9,19,3,17,5,10] **Relative Frequency:**
16.5/100K **Relative Distribution:** 13.4/C {INI# N2.421.533.760} ^

productivity The amount of work accomplished in relation to the amount of
resources used. Measuring *productivity* in nursing is complex because the
amount of work required to care for each patient varies widely as do the skill
levels of nurses. *Patient classification system*s can be useful in determining
the amount of work accomplished because they are sensitive to variations in
patient needs and the number of personnel involved. However, they are not
sensitive to the variation in skill level. Other factors affecting *productivity* are
the technologies employed and the management practices. *Productivity*
indicators are closely monitored to evaluate quality and to control costs.
Efforts to improve *productivity* include scheduling *nursing staff* by patient
acuity, revising care delivery methods, and continuously evaluating support
systems. Because nurses are the single largest group of institutional
employees, nursing *productivity* is critical to the organization's financial
status. The coordinated interface of all services is essential to achieve
maximum *productivity*. *Productivity* is only one goal in an organization and is
balanced with others since high *productivity* can be achieve for short periods
by not scheduling an adequate number of personnel, however eventually this
can result in low morale, high *turnover* and absenteeism, and low *patient
satisfaction*. Long-term *productivity* results from the greatest amount of

revenue generating actions performed with the least amount of human and material resources necessary for satisfactory *patient outcomes*, sustained efforts, acceptable institutional liability, and fair labor practices. **Example:** "*Productivity* was validated by an increase in staff cohesiveness, continuity of *patient care*, morale, and decreased absenteeism, employee *turnover* rate, medication errors, and grievances from patients and families" (Jones & Brown, 1986) (Nur Man). **Synonym:** none. **Association Profile:** [3,3,1,11,3,15,8,6,9,8,5,3,3,3,8,11,7,8,8,3,7] **Relative Frequency:** 44.9/100K **Relative Distribution:** 33.1/C {INI# (F2.784.692.351} ^

professional nurse   A practitioner with a minimum of a baccalaureate in nursing and a state nursing license who has a degree of professional *autonomy*, recognized expertise and experience, and ethical standards. A *professional nurse* relies on a body of knowledge, keeps current about new developments in nursing and related health advances, and contributes to the development of knowledge. *Professional nurse*s have expertise and accountability beyond that of technical nurses who earn diplomas or associate degrees in nursing. **Example:** "Creating *organizational structure*s that demand the highest responsibilities from *professional nurse*s will be the vehicle that moves us into a new age of *health care*" (Porter-O'Grady, 1987) (Nur Eco). **Synonym:** none. **Association Profile:** [4,12,3,0,2,19,3,5,18, 13,14,2,2,4,9,5,7,3,4,4,6] **Relative Frequency:** 14.3/100K **Relative Distribution:** 19.4/C {INI# } ^

professional nursing   A manner of performing *nursing activities* characterized by *collaboration* with other *health care* personnel, clinical expertise, high clinical and ethical standards, research based action, and independence in making critical judgements. *Professional nursing* is dependent on an *organizational structure* and policies that allow *professional nurses* to practice with a degree of *autonomy* and with authority and accountability. **Example:** "Fortunately, we are entering a *healthcare delivery system* that will demand the fullest expression of *professional nursing practice* and *organizational structures* and systems to support it" (Porter-O'Grady, 1987) (Nur Eco). **Synonym:** none. **Association Profile:** [3,8,8,8,3,17,0, 7,18,20,8,6,0,6,10,22,5,0,4,0,0] **Relative Frequency:** 16.7/100K **Relative Distribution:** 17.6/C {INI# } ^

professional practice   The systematic performance of *nursing activities* characterized by reliance on theoretical knowledge and scientific research. *Professional practice* entails participation in decision making and the continuous evaluation of activities and results. **Example:** "Five major areas of responsibility, representing the components of *professional practice* as seen in existing performance plans and the literature, were identified: (1) *nursing process*, (2) collaborative practice, (3) leadership, (4) management, (5) professional development and *continuing education*" (Behrend, Finch, Emerick, & Scoble, 1986) (JONA). **Synonym:** none. **Association Profile:** [2,2,0,0,0,11,6,2,23,37,4,2,2,2,4,4,7,0,4,4,7] **Relative Frequency:** 7.8/100K **Relative Distribution:** 10.6/C {INI# N4.452.758+} ^

prospective payment system **1.** A formalized method used to predetermine the *reimbursement* for *healthcare* services provided for Medicare patients before the services are provided. *Reimbursement* is based on each admission regardless of *length of stay* and unanticipated costs. The level of *reimbursement* is determined by the patient's diagnosis related group. The *prospective payment system* was designed to decrease costs and *length of stay* and has had a dramatic affect on the delivery of *healthcare* services since its initiation in 1983. *The prospective payment system* replaced the retrospective cost-based method of *reimbursement* initiated in 1968. Of concern to nurses is the absence of adjustments for variations in *nursing care* requirements within each *diagnoses related group*. Nurse researchers are attempting to identify the component *nursing costs* of diagnoses related groups to quantify the contributions of nurses and to obtain a fair share of the *reimbursement*. **Example:** "The boldest effort to control rising *healthcare* expenditures has been the creation of the Medicare *Prospective Payment System* (*PPS*) authorized for Medicare under the Social Security amendments of 1983 (Sovie, 1985) (Nur Ec). **2.** Any method of *reimbursement* in which a *third party* provides guidelines to establish *reimbursement* for *healthcare* services in advance of services. **Example:** "The effective management of *patient care* resources under *prospective payment systems* requires new knowledge and a comprehensive and integrated *patient care* and financial *information system*" (Sovie, Tarcinale, Vanputee, & Stunden, 1985) (Nur Man). **Synonym:** none. **Association Profile:** [0,2,2,22,0,32,6,4,13,

7,9,2,0,2,4,0,4,0,0,0,2] **Relative Frequency:** 11.4/100K **Relative Distribution:** 14.1/C {INI# N3.219.521.710.305.200+} ^

quality assurance (QA) A validation mechanism used in most *healthcare* facilities (required for accreditation by the Joint Commission for Accreditation of Healthcare Organizations) to measure, improve, and ensure the quality of *nursing care* activities and their documentation. To monitor the level of quality, the *nursing care* delivered is compared to *nursing care* standards. In hospitals a *quality assurance* committee develops new standards, refines existing standards, identifies problems, and monitors *patient care.* A *quality assurance* coordinator chairs a *quality assurance* committee and coordinates activities to monitor practice, gather data, and implement change. A *quality assurance* coordinator often reports directly to the *director of nursing.* Many of the *quality assurance* activities entail retrospective *medical record* audits for medication errors, insufficient documentation, improper procedures, and prolonged response times to patient needs. Some *quality assurance* programs conduct concurrent audits while patients are receiving care. Both total organization and unit base approaches are used to measure *quality of care.* Unit based approaches are characterized by the involvement of *nursing staff* in all *quality assurance* activities including *information* gathering and analysis. **Example:** "The *quality assurance* commitment assures the appropriate preparation of practitioners to meet the specific needs of the institution; maintains criteria that establishes an acceptable level of competence with which its providers must comply; establishes a baseline for delivering

anticipated levels of *nursing service*; and indicates a mechanism upon which a

performance review process will be developed" (Porter-O'Grady, 1985)

(JONA). **Synonym:** none. **Association Profile:** [17,7,2,2,6,9,4,2,4,

17,8,0,6,4, 6,15,9,2,11,4,0] **Relative Frequency:** 23.5/100K **Relative**

Distribution: 19.0/C {**INI#** N4.761.700} ^

quality of care   A measure of the suitability of *nursing care* for the needs of

a *patient population* based on the *standards of care* of an institution. *Quality*

of care cannot be determined by internal indicators alone because the needs of

the community must be considered. The *quality of care* delivered in a hospital

is determined from indicators of health status, health needs, and *healthcare*

access. Practitioners and researchers work together to identify critical

indicators. They use those indicators to seek new knowledge on how to

improve care. Valid indicators are specific, measurable, and realistic.

Examples of specific indicators include medication error rate, nosocomial

infection rate, average waiting time for services, and availability of services.

The main focus of a *quality assurance* program is to develop *standards of*

care, identify indices of quality care, monitor and evaluate the *quality of care*

delivered, and develop plans to improve it. *Standards of care* reflect the

values of nursing leaders and are based on scientific and intuitive knowledge.

Standards of care are changed with advances in technology. Impetus for

improving *standards of care* can come from nurses and physicians who

practice on *nursing units*. *Collaboration* between nurses and physicians helps

identify the most significant questions and the most creative approaches for

improving the *quality of care*. Internal variables influencing *quality of care* include the quality of the *nursing staff*'s education, skill, and experience; the quality of in-service educational programs; and the skill, knowledge, and leadership provided by *nurse administrators*; and the nurse/patient ratio in relation to average patient *acuity*. External variables influencing *quality of care* include the availability of resources, the epidemiologic characteristics of the population, the health literacy of the public, and environmental health conditions. *Nurse administrators* who study trends in the community are better able to design programs, *organizational structures*, and care *delivery systems* that are sensitive to the changing needs of the population. *Nurse administrators* evaluate alternative approaches to meeting changing patient needs by considering available human and material resources and their costs, use, and benefits in *terms of health results*. **Example:** "Overtime work, substitute nurses, and working with less than required staff may have adverse effects on *quality of care* and on staff morale" (Lee & Ericksen, 1990) (JONA). **Synonym:** quality care. **Association Profile:** [2,11,4,9,2,11,5, 5,17,12,18,6,5,2,8,6,2,2,5,5,0] **Relative Frequency:** 19.0/100K **Relative Distribution:** 22.2/C {INI# N4.761} ^

recruitment   Finding and attracting new personnel for the health services or new students for schools of nursing. *Recruitment* is necessary to replace personnel who leave, to adjust to new or higher intensity *nursing care* needs, or to obtain special expertise. The cost of recruiting nurses in hospitals can range from $2000-$3000 per nurse hired. For key positions, *recruitment* costs

can be much higher. In addition to the *recruitment* costs of obtaining new personnel, there are orientation costs and costs that accrue from the relatively low *productivity* of new employees. *Recruitment* strategies include advertising, talking with potential applicants, offering hiring bonuses and incentive benefits, and developing a positive reputation in the community. *Recruitment* is an activity used by *nurse administrators* to maintain personnel for existing programs and to acquire personnel for expanding or new programs. *Recruitment* can invigorate an organization by bringing in personnel with new ideas. *Retention* is the companion strategy used to maintain an adequate level of nursing personnel. **Example:** "*Job satisfaction* appears to be a major factor affecting *recruitment* and *retention* of qualified nurses for hospital positions" (Whaley, Young, Adams, & Biordi, 1989) (JONA). **Synonym:** none. **Association Profile:** [5,3,2,21,2,22,4,4,34, 12,7,0,0,10,4,11,3,3,7,4,5] **Relative Frequency:** 15.2/100K **Relative Distribution:** 17.3/C {INI# } ^

reimbursement   Repayment of expenses incurred in providing *healthcare* services. The most significant development in *healthcare reimbursement* has been the change from cost-based *reimbursement* to case-based *reimbursement* in 1983 when the *prospective payment system* was initiated. The *prospective payment system* was designed to reimburse hospitals according to the diagnosis related group of each patient. Hospital revenues are mainly generated through third-party *reimbursement*, in which an entity not involved with giving or receiving care, is involved in reimbursing for that care. The

major third-party payors are the federal and state governments and insurance companies, although some companies are self-insured and thus become the third-party. *Reimbursement* may not match expected remuneration and the first-party, the patient, pays the difference or the second-party, the institution or practitioner, dismisses the balance due. *Nurse executives* have worked for changes in *reimbursement* policies so that repayment will be for specific *nursing care* actions rather than included with general charges for room and dietary services. *Nurse practitioners* have worked for direct *reimbursement* for their services but have met only limited success. **See** diagnosis related group, *prospective payment system.* **Example:** "Resolution of the *healthcare* crisis is heavily dependent on nurses providing aggressive, knowledgeable leadership in setting new directions in *reimbursement* policies" (Hoffman, 1988) (Nur Eco) **Synonym:** payment. **Association Profile:** [0,5,1,17,3, 21,5,3,12,10, 17,6,1,3,13,1,14,3,4,2,3] **Relative Frequency:** 27.2/100K **Relative Distribution:** 23.9/C {INI# (N3.219.521.710.305.200+)} ^

retention   The act of keeping nurses in employment at an institution or of keeping nurses in the profession. Mechanisms to retain nurses in institutions include improving working conditions, increasing incentives, ensuring support for *professional practice*, giving recognition, and providing appropriate compensation. *Recruitment* and *retention* are major concerns of most *nurse administrators*. Interviewing personnel who leave employment is considered essential to identify problems that affect *retention* rates. High rates of *retention* usually reduce costs by reducing the resources that would otherwise

- be used in recruiting, hiring, placing and training new personnel. **Example:**

"*Retention* rates among nursing personnel are very low due to changing

expectations in the profession and revisions in *reimbursement* policies that

influence *health care organizations*" (Smith, Mangelsdorf, Piland, & Garner,

1989) (JONA). **Synonym:** none. **Antonym:** *turnover.* **Association Profile:**

[1,1,2,2,1, 19,4,4,39,10,3, 1,2,13,3,11,1,4,5,3,4] **Relative Frequency:**

19.4/100K   **Relative Distribution:** 13.0/C {INI# } ^

severity of illness   The degree of criticalness of a patient's medical

condition. The greater the *severity of illness* the closer a person is to death or

disability. A number of measures have been developed for measurement of

the *severity of illness*, including the Computerized Severity of Illness Index by

Horn and the Apache Scale. The relationship between *severity of illness* and

patient *acuity* for nursing needs is not entirely clear. *Diagnosis related groups*

(DRGs) are based on *severity of illness.* For some *diagnosis related groups*,

nursing time requirements are consistent with *severity of illness.* For other

diagnosis related groups, nursing time requirements vary widely. Although

nurse administrators would like to receive *reimbursement* for specific *nursing*

activities, reimbursement from Medicare and some insurance companies is

based on average costs per *diagnosis related groups* or *severity of illness.* The

unpredictability of *nursing care* requirements makes it difficult to determine

in advance nursing's share of the *reimbursement.* **Example:** "The complexity

and *severity of illness*, the constant demands of near capacity use of all

intensive *care units*, and the ever-increasing number and variety of intricate

machines create challenging and exciting opportunities for nurses both in and

out of *critical care* areas" (Armstrong, Eck, & Schuch, 1987) (NAQ).

Synonym: (acuity). **Association Profile:** [0,8,13,3,0,8,3,13,8,5,37,3,0,0,

3,3,18,3,0,3,0] **Relative Frequency:** 5.5/100K **Relative Distribution:**

4.9/C {INI# (N2.421.589.473.100.608} ^

shared governance   An administrative system in which decision-making is

decentralized to the unit level of an institution to enhance the level of

professional nursing practice. Participation in decision-making allows nurses

more *autonomy* and control over working conditions and encourages

accountability through peer review. The interaction and consensus

experienced while setting standards and policies provides a basis for

professional identity and growth. **Example:** "A *shared governance* model

can cultivate and enrich the *professional nursing* model used in the delivery of

patient and family care" (Jones & Ortiz, 1989) (NAQ). **Synonym:**

(participatory management). **Association Profile:** [3,0,3,0,5,12,3,3,10,

12,0,0,0,0,0,12,16,0,5,0,5] **Relative Frequency:** 8.4/100K **Relative**

Distribution: 3.5/C {INI# } ^

span of control   The number of personnel for whom a manager is

responsible. In decentralized *organizational structures* the *span of control* is

wide with managers supervising more than the usual ratio of subordinates. In

tall structures the *span of control* is narrow with managers supervising as few

as 7 people. If the *span of control* is narrow more managers are required. The

optimal *span of control* in nursing organizations is influenced by several

factors: the work technology, the availability of nursing personnel, the types of patients, and the philosophy and objectives of *nursing administration*. Units where the care technology is routine can function with fewer mangers and wider spans of control than units where change is unexpected and rapid. **Example:** "A *nurse manager* in an emergency ward may require a smaller *span of control* because the patient's level of *acuity* is higher, the immediacy of decisions is greater, more coordination is required of *healthcare* professionals, and patient *turnover* is greater" (Alidina & Funke-Furber, 1988) (JONA). **Synonym:** span of authority. **Association Profile:** [0,7,0,0,0,14, 12,4,5,12,5,0,0,5,2,7,5,5,5,2,0] **Relative Frequency:** 6.2/100K **Relative Distribution:** 1.1/C {INI# } ^

staff nurse   A member of the *nursing services* employed by an institution whose primary responsibility is direct *patient care*. The *staff nurse* is an entry level position. *Staff nurse* functions depend on the type of organization and organizational unit. Some organizations are decentralized allowing *staff nurses* to control much of their work. Others are centralized. *Staff nurses* depend on *nurse administrators* to provide safe working conditions, the appropriate numbers of personnel for the required work, necessary resources, and appropriate *support services*. *Staff nurses* are usually supervised by *head nurses*. They also implement physician orders. Traditionally, *staff nurses* have been generalists. But with the increasing *acuity* and technology, more *staff nurses* have become specialists. **Example:** "Decentralization, the core concept driving *primary nursing*, empowered *staff nurses* to attain and

maintain authority over the *nursing care* received by each patient in their caseload" (Manthey, 1989) (JONA). **Synonym:** floor nurse, unit nurse. **Association Profile:** [3,4,4,0,3,13,6,6,24,8,10,2,4,5,3,5,3,7,13,3,6] **Relative Frequency:** 61.4/100K **Relative Distribution:** 38.4/C {INI# } ^

staffing The process or system used to distribute nursing personnel resources by time and place to meet demand and maintain appropriate *standards of care* and *productivity*. Long-range *staffing* is often done in patterns for simplification but *staffing* plans are also flexible to adjust to unexpected admissions, nurses who call in sick, or nurses who fail to show up for work. An important characteristic of *staffing* is the mix of personnel including aids, licensed practical nurses, RNs, or *clinical nurse specialists*. When making *staffing* decisions, *nurse administrators* consider the personnel budget, patient classification data, available *nursing resources*, skill levels of available personnel, and the care delivery method. **Example:** "After review of our *patient classification system*, we established four *nursing care* hours as the basis for *staffing*" (Moral & Ulrich, 1987) (Nur Man). **Synonym:** (scheduling). **Association Profile:** [4,5,1,8,2,18,3,15,20,8,14,1,3,4,4,10,12, 3,15,4,5] **Relative Frequency:** 66.8/100K **Relative Distribution:** 38.7/C {INI# N4.452.677.650} ^

standard(s) of care Agreed-on levels of expected professional performance used to guide and evaluate professional and therapeutic activities. In an institution, *standards of care* are part of the organizing framework used to guide the production of *healthcare* services and to evaluate the quality of

those services. These predetermined guidelines or quality indicators are
established and refined by a standards committee or a task force and are based
on the needs of the *patient population* served, the philosophy and traditions of
the hospital, the technologies in use, and identified risks for patients and
practitioners. A *quality assurance* committee determines the *quality of care*
by comparing actual care with the *standards of care*. The challenge for *nurse
administrators* is to maintain high *standards of care* with the resources
available. **Example:** "The purpose of the standards committee is to
coordinate and validate *standards of care* that have been developed by
professional nurses in response to patient problems and concerns, and the
needs of specific populations" (Bachrack, Ballesteros, Black, Clark, Dolley,
Garrick, Pilotte, & McKinnon, 1988) (NAQ). **Synonym:** standards.
Association Profile: [0,7,3,4,10,18,0,0,7,12,15,3,6, 8,0,8,0,0,7,4,0] **Relative
Frequency:** 10.4/100K **Relative Distribution:** 11.3/C {INI# } ^

support services   Suppliers who provide resources as a compliment to
medical and *nursing care* such as pharmacy, physical therapy, dietary, and
occupational therapy. *Support services* enhance a patient's treatment plan or
the ability of nurses to perform. The availability of appropriate *support
services* has a strong affect on *productivity*, morale, and *length of stay*. Some
support services are clinical, such as radiology, while others are nonclinical
and basic to the overall operation such as communications, maintenance, and
secretarial. Some authors label the nonclinical services as technical services
rather than *support services*. Hospital and nurse administrators are also

sometimes considered *support services*. **Example:** "A requirement for *collaboration* and consultation between and among the executive directors of service lines and the executive directors of support service lines was mandated to ensure organization wide adherence to standards, policy, and consistency in practices" (Van Ess Coeling & Wilcox, 1988) (JONA). **Synonym:** *ancillary* services. **Association Profile:** |0,16,10,14,15,18,10,8,40,21,21,6,0,5,19,15,0, 16,13,0,6| **Relative Frequency:** 9.0/100K **Relative Distribution:** 9.9/C {INI# } ^

third party   An entity not directly giving or receiving *healthcare* but paying for care, or making decisions on behalf of those giving and receiving care. Major third-party payors are state and federal governments and insurance companies. People who have living wills have granted *healthcare* decision-making responsibility to a *third party*. The concept of *third party* also applies to parents of minors and court-appointed guardians who have the legal authority to represent their interests. *Reimbursement* by third-party payment is limited or not available for some types of acute, preventative, and long-term services. *Reimbursement* by Medicare and some insurance companies is based on average costs and does not vary for unexpected expenses or extended lengths of stay in hospitals and other institutions. **See** *reimbursement*, *prospective payment system*. **Example:** "The increased time that it takes for patients and *third party* insurance carriers to pay for their services serves to heighten the problem of finding the necessary cash to cover payroll and to pay vendors" (Pelfrey, 1990) (JONA). **Synonym:** none. **Association Profile:**

[2,10,0,28,0,32,0,5,0,0,28,10,5,5,25,5,5,2,5,2,2] **Relative Frequency:**

5.8/100K **Relative Distribution:** 10.2/C {INI# (N3.219.521.710+)} ^

turnover   The movement of nursing personnel away from an organization.

The crude *turnover* rate is calculated by dividing the number of personnel who

leave by the total employment for an organizational unit. Some *turnover* is

advantageous to an organization, new people with new ideas can help

organizations become more responsive to changing circumstances and the

public served. However, *turnover* is expensive because new personnel require

orientation and training to attain their maximum level of *productivity*. Few

health services have an annual *turnover* rate less than 10%. Some studies

indicate that the average *turnover* rate for 1975-1984 was as high as 70%.

Recruitment, orientation, and *retention* are the three activities that are related

to *turnover*. Studies indicate that a variety of factors contribute to *turnover*.

Some are not related to the job or work-setting. These include the availability

of job opportunities, pregnancy, and spouse transfer. Leading work-related

factors contributing to *turnover* include low levels of *job satisfaction*, low pay,

high safety risks, lack of child care, role confusion, and interpersonal conflict.

Example: "High staff *turnover* can impact negatively on morale and *job*

satisfaction which can, in turn, further affect *turnover*, *productivity*, and

service quality" (Curran & Minnick, 1989) (Nur Eco). **Synonym:** *turnover*

rate, rate of *turnover*. **Association Profile:** [0,0,0,10,1,16,1,3,26,12,2,1,

5,3,2,12,3,5,7,1,4] **Relative Frequency:** 27.5/100K **Relative Distribution:**

15.1/C {INI# N4.452.677.680} ^

work environment The physical, technological, social, and organizational surroundings that employees encounter and which support or deter the provision of *nursing care*. The condition and convenience of the physical *work environment* are factors that can influence the morale and work of nurses. *Nurse administrators* who realize the impact that the physical surroundings have on the ability of nurses to perform their duties will address the safety, convenience, and esthetic aspects. The technological surroundings are often complex and fast-changing in hospitals and require skill, intelligence, and the ability to tolerate stress. *Nurse administrators* strive to foster professional attitudes so that the social interactions of work are characterized by mutual respect. The organization of the *work environment* is one area that *nurse administrators* have a considerable amount of influence. They design *organizational structures* and implement policies, programs, and systems that affect work and the *work environment*. **Example:** "The *nurse manager* with a high regard for both the issues and the relationships in the *work environment* is more inclined to confront problems as they evolve" (Collyer, 1989) (Nur Man). **Synonym:** none. **Association Profile:** [8,3, 0,0,0,8,12,7,21,10,4,7,7,5,3,8,2,8,7,2,8] **Relative Frequency:** 8.6/100K **Relative Distribution:** 12.0/C {INI# } ^

Taxonomy

The initial taxonomy was determined by the cluster analysis of association

profiles for each of the 85 key terms. The cluster analysis output data is in

Appendix Q. The R-Squared values were evenly distributed. Therefore the cutoff

for estimating the level of clustering was tentatively set at .5, the lowest limit

suggested during the design of the study. The R-Squared value of .5 resulted in

12 groups. The clustering of 12 groups above the cutoff is shown in Figure 14.

Figure 14 . Clustering above individual groups.
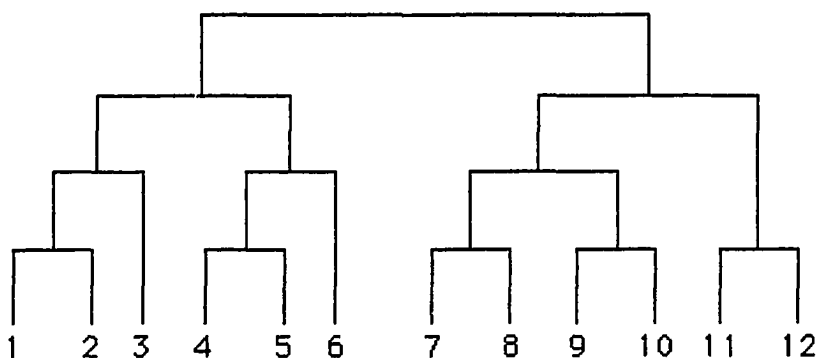
The purpose of cluster analysis is to separate elements into distinct groups.

Some sets of data produce an uninterpretable degenerate solution, usually with

extensive stair-step patterns. If the elements are connected in stair-step patterns,

there are no features to guide in clustering them. The top portion of the hierarchy

in Figure 14 was symmetric which was a favorable result. Figure 14 could be

clearly separated into two groups, 1 through 6 and 7 through 12. Some of the 12

groups of terms that connected to the corresponding numbers in the diagram

above had stair-step features, but the overall solution was not degenerate because

the stair-step patterns were balanced before they became extensive. The first pair

of terms to be joined in each group was called the base pair and represented the

pair with the closest relationship. Because of the size of the nursing

administration taxonomy, its 12 groups are displayed in separate Figures.

<u>Figure 15</u> . Group 1

To group 2

nursing   nursing   prospective   third
intensity   costs   payment   party
                                  system
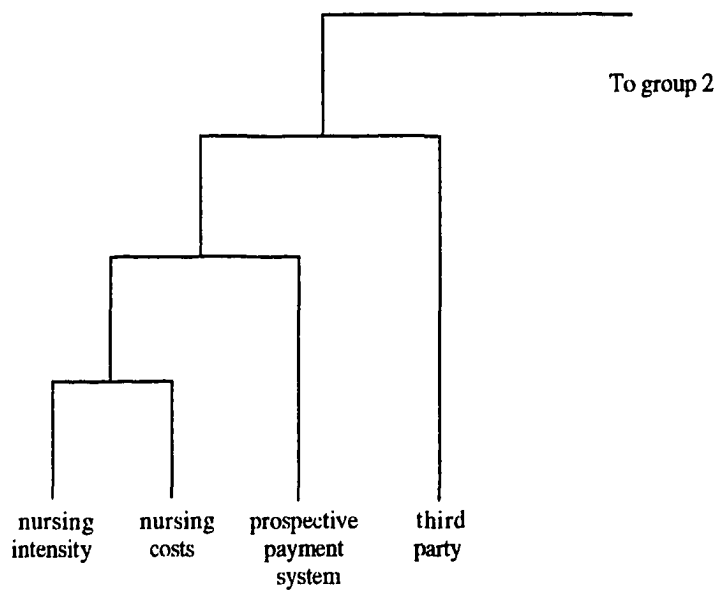
Group 1, with four terms, was small compared to others. Group 1 displays

a short stair-step pattern. The base pair was nursing intensity and nursing costs.

Figure 16. Group 2

| patient classification system | nursing unit | information system | nursing research | case mix | healthcare | nursing service | reimburse -ment |
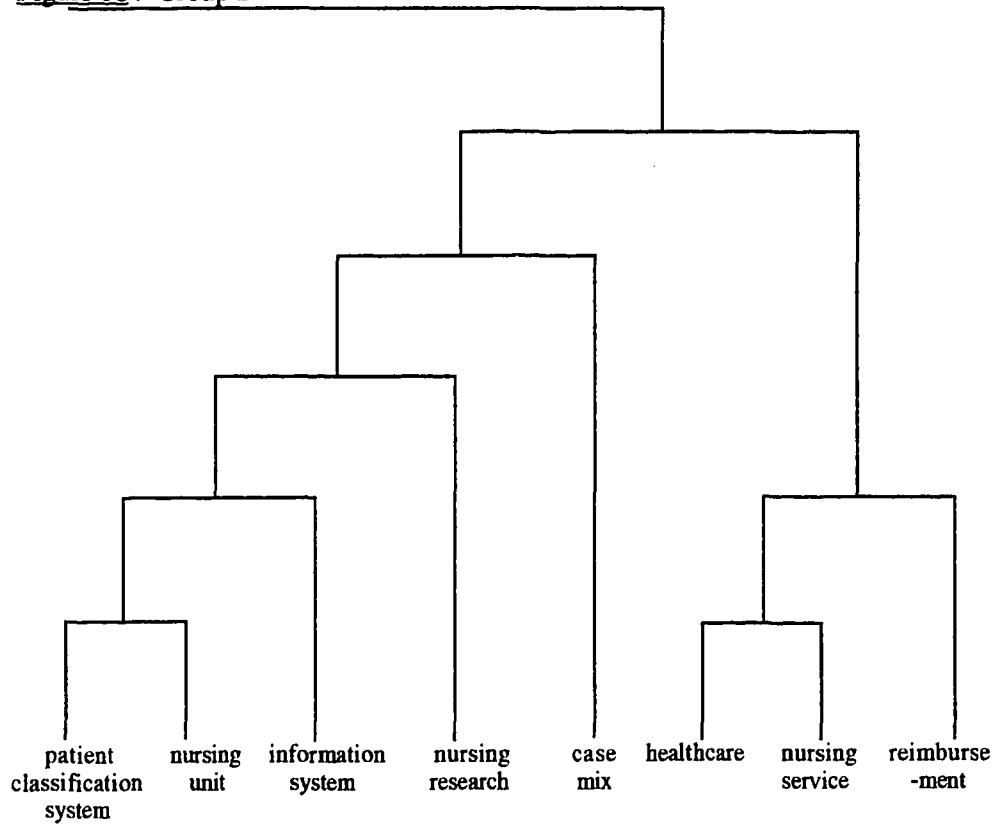
Group 2 had 8 terms. It was a well formed cluster with some stair-step features on the left but was balanced by a grouping of three terms on the right. The base pair was healthcare and nursing service.

Figure 17. Group 3
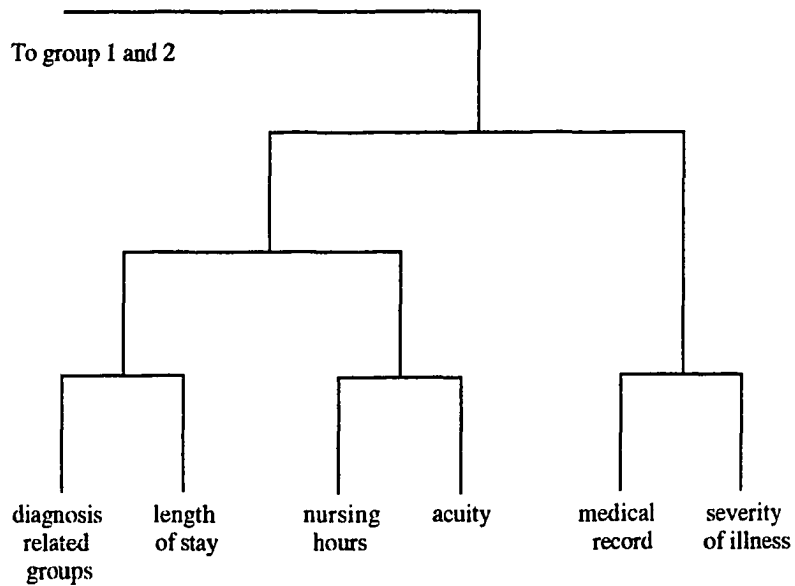
Group 3, with 6 terms, was small but it had an ideal symmetric pattern. Each of the terms joins one other term before groups are joined. The base pair was nursing hours and acuity.

Figure 18. Group 4
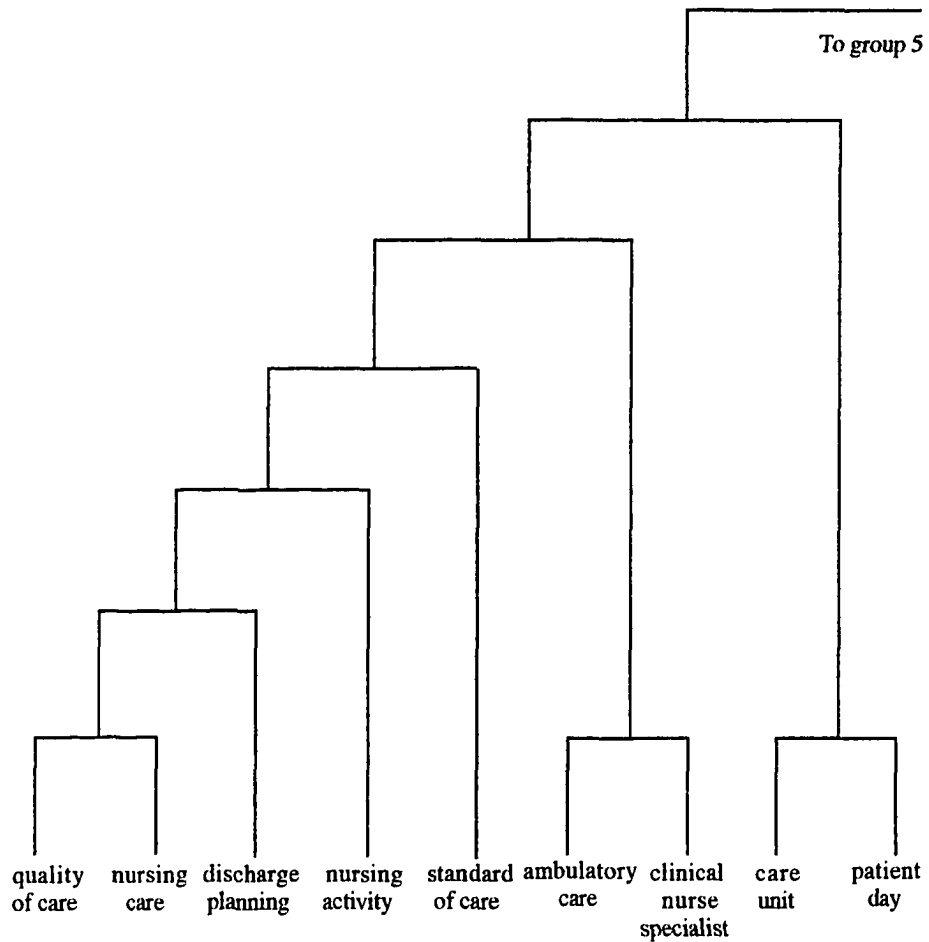
Group 4 had 9 terms. It had a stair-step pattern. The two right lower pairs

occurred and balanced the stair-step pattern. The base pair was ambulatory care

and clinical nurse specialist.

Figure 19 . Group 5
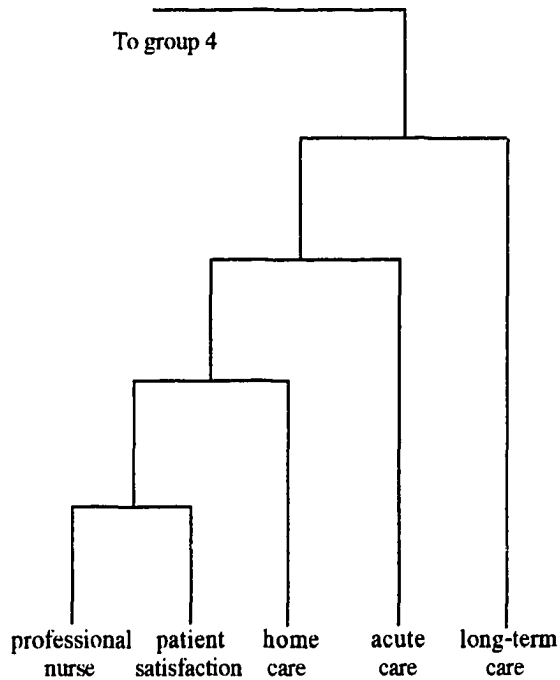
Group 5, with 5 terms, was another small group in stair-step form. The stair-step was not extensive enough for a degenerate solution but the smallness of the group suggested further consideration in the grouping procedure. The base pair was professional nurse and patient satisfaction.

Figure 20 . Group 6

To groups 5 and 4

direct   indirect
care   care
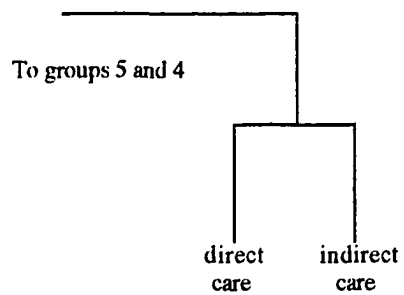
Group 6 created a problem with the 12 cluster solution. With just two

elements, this group was not sufficiently large to stand alone and thus forced a

reevaluation of the clustering procedure as discussed in chapter 5.

Figure 21. Group 7

To group 8

collabo-   nurse   nursing   staff   support   nurse   primary critical job   autonomy
ration   practi- practice nurse   services admini- nursing   care   satis-   nursing
            tioner   strator   faction   supervisor
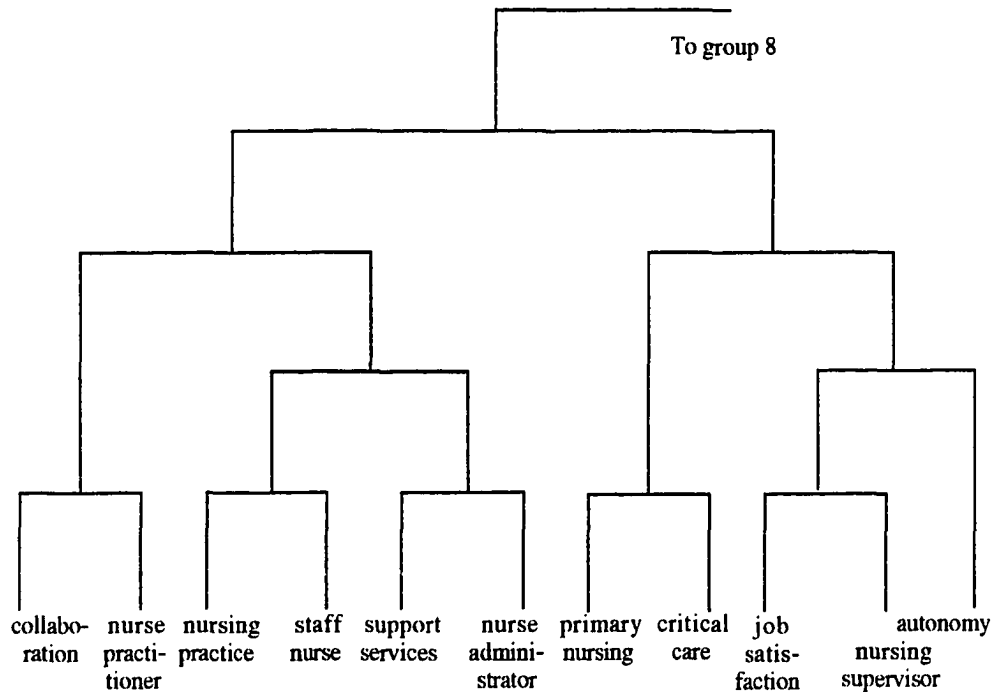
Group 7 had 11 terms and was a well formed, symmetric group. Five

pairs of terms were formed before groups were joined. The base pair was nursing

practice and staff nurse.

Figure 22. Group 8

To group 7

continuing   nursing recruitment   turnover
education   shortage   retention
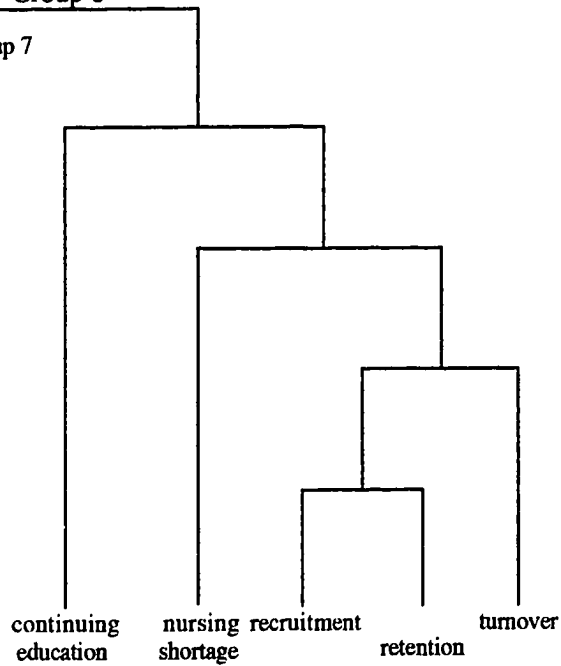
Group 8, with 5 terms, was small with a stair-step feature. The base pair

was recruitment and retention.

Figure 23 . Group 9
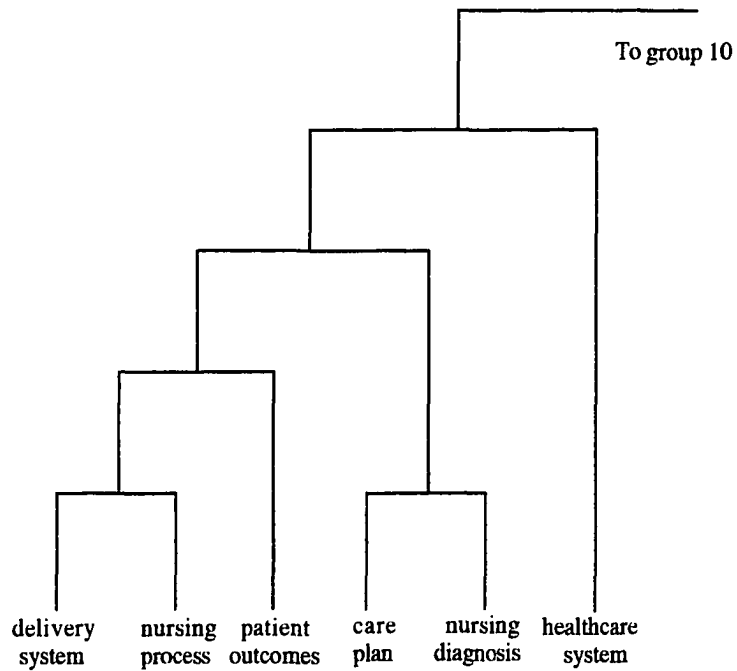
Group 9, with 6 terms, had a stair-step feature but the pair "care plan" and "nursing diagnosis" added an element of symmetry. The base pair was delivery system and nursing process.

Figure 24 . Group 10
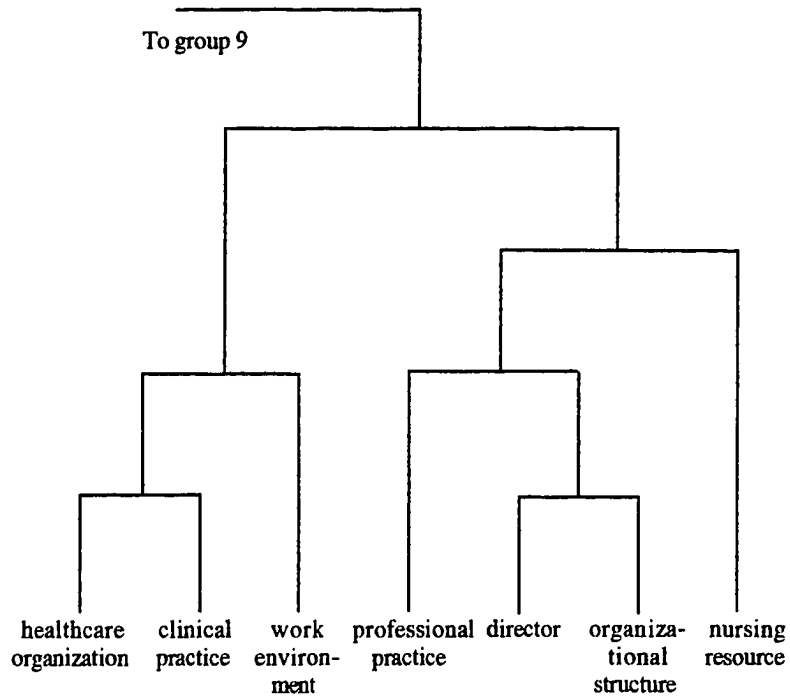
Group 10, with 7 terms, was symmetric. Director and organizational

structure were the base pair.

Figure 25. Group 11 Part A

To group 12

To part B

Group 11
part A

staffing patient patient   infor- nursing nurse   nurse   director product- head
        population care   mation   staff   manager executive   of   ivity   nurse
                                                                     nursing
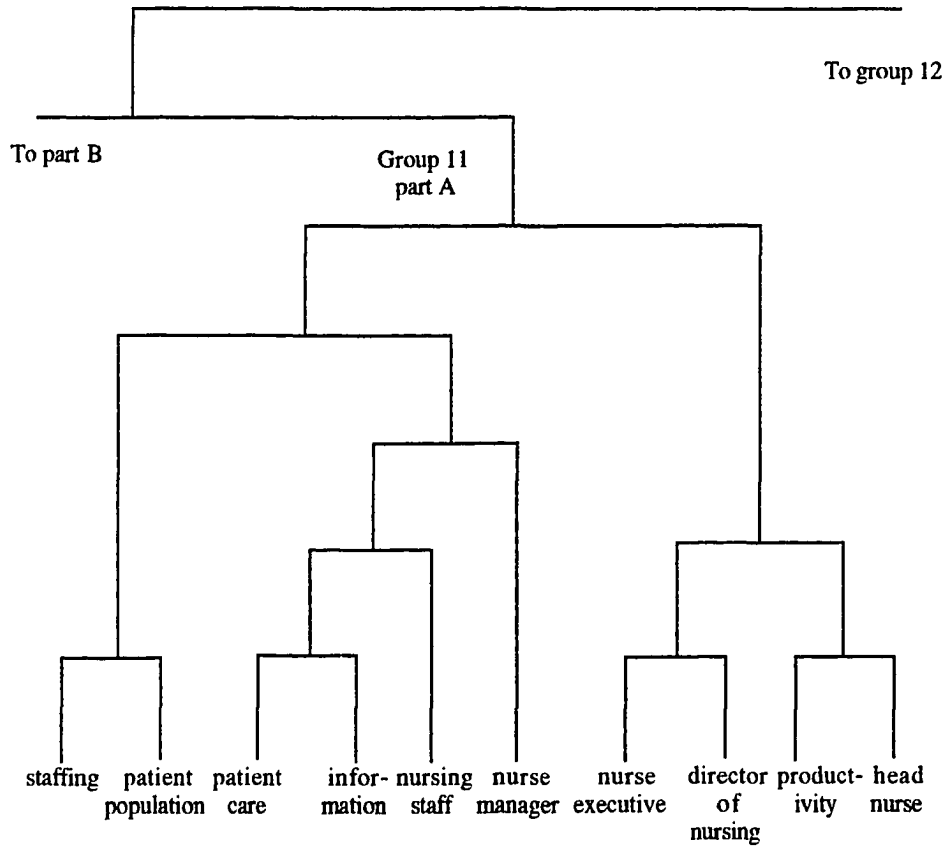
Group 11 was too large to show on one page so it was divided between

Part A and Part B. Part A, with 10 terms, was well formed, symmetric and large

enough to stand on its own even if the grouping level had not dictated a join to

Part B. The base pair was patient care and information.

Figure 26. Group 11 Part B
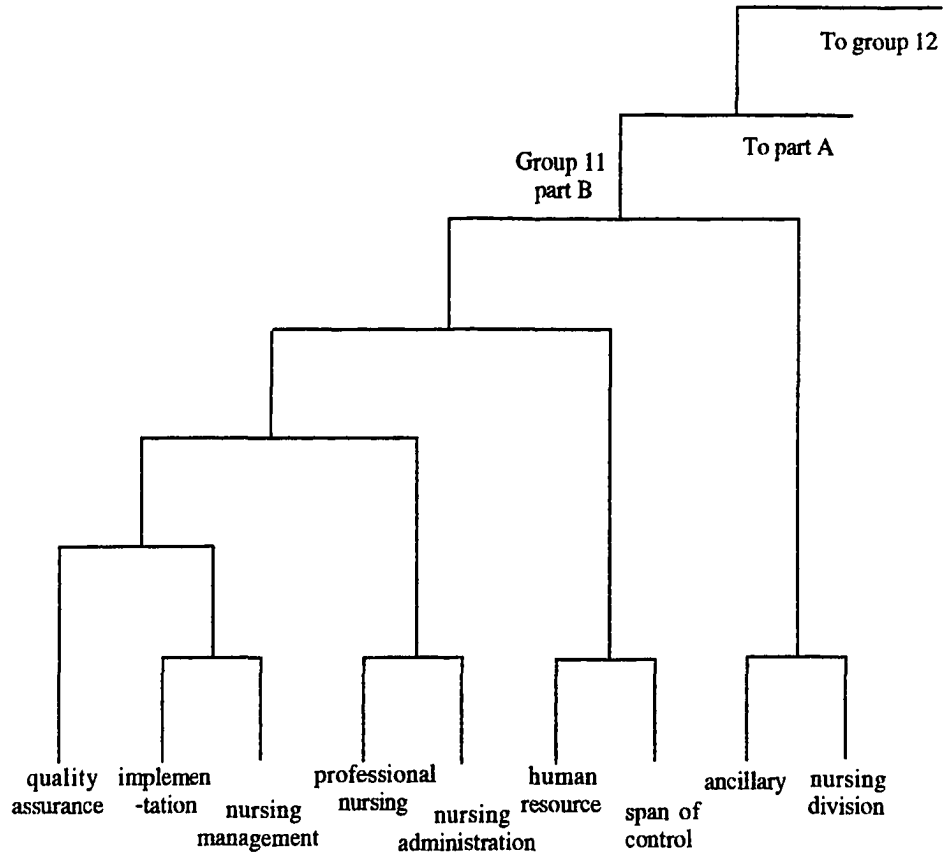
Group 11 Part B, with 9 terms, had an interesting blend of term pairs joined in a stair-step pattern. If this stair-step pattern had continued much further it would have presented a problem but its link with Part A provided sufficient symmetry. The base cluster was implementation and nursing management.

Figure 27 . Group 12

To group 11

shared   computer   cost
governance   system   effectiveness
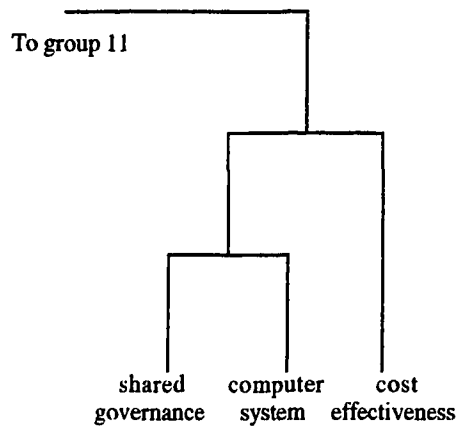
Group 12, with 3 terms, created another problem with the 12 cluster

solution because of its small size. As with group 6, this group strongly suggested

extending the grouping procedure to allow it to join it with a larger group.

The taxonomy is shown in a dendrogram in Appendix R. The linkages are

shown proportionately to the sequence of clustering.

CHAPTER 5

ANALYSIS, CONCLUSIONS AND RECOMMENDATIONS

In this final chapter the findings are analyzed and the implications of the

findings for nursing administration are discussed. The strengths and weaknesses of

the methodology and suggestions for refinement are presented. Recommendations

for future analysis and research are made.

Key Domain Terms in the Nursing Administration Lexicon

The analysis of key domain terms is organized as follows. First, several

observations about the size of the lexicon in nursing administration are made.

Second, term frequency and the frequency of single and multi-word terms are

addressed. Third, the derivations of terms in nursing administration, a field that

draws on knowledge from a variety of sciences, are briefly described. Fourth, the

85 select domain terms are compared to the concept categories and terms in the

frame of reference. Throughout, observations about the strengths and weaknesses

of the study methods are addressed and recommendations are made for future

study.

With respect to the size of the nursing administration lexicon, the study

database contained 6500 to 8000 terms. There are approximately 300 to 500 key

terms in the nursing administration publications included in the analysis.

Therefore, identification of 85 key terms was a first step in identifying and

defining the key terms in nursing administration. For a field as complex as

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nursing administration, 300 to 500 key terms seem inadequate to describe and define the domain. A lexicon for economics, similar to the type developed in this study, has over 1400 terms (McGraw-Hill Dictionary of Modern Economics, 1983). Unabridged dictionaries of the English language contain 315,000 to 460,000 terms (Random House Dictionary of the English Language, 1987; Webster's Third New International Dictionary, 1986). It is estimated that the English language has between 650,000 and 750,000 terms. Many of these are technical terms from science and industry. To understand and describe nursing administration, more terms are needed from nursing, management science, information science and other fields including economics, medicine, and public health. However, the terms must be understood and used from the perspective of nursing. The remainder of the key terms and the gaps in knowledge suggested by the terms will be identified as the database is expanded and techniques are improved. The use of computerized frequency listings is probably the best approach to identify key terms and to keep selection procedures to a manageable number but consideration should also be given to theory-generating approaches such as the Delphi technique. Some terms important to nursing administration may not be in the literature because of a lack of journal space or due to the biases of the authors and editors. In the future, the selection procedures could be improved by first eliminating terms from the list that clearly do not comprise key terms. This was partially done with the stop word list of functional terms. However, other terms that are not technically functional terms but also are not key

terms could be removed. A shorter list would increase rater ease in selecting key terms.

The multi-word identification and formatting procedure was crucial to this study. As noted, more than three-quarters of the key terms were multi-word terms. It is often in combining terms that new concepts are expressed and language becomes more precise and expressive. For example, the term "case mix" conveys a complex idea and has no single-term synonym. The procedure of identifying multi-word terms could be improved with the use of an expert panel. Each nurse administrator has a personal style of language usage and a unique experience in nursing administration. The use of a national panel of experts in nursing administration could improve term selection and multi-word term identification by using consensus. Thus individual differences would have less of an effect. As the database is expanded in future studies, more multi-word terms will be identified.

The study procedures worked well in producing a frequency listing from which experts selected key terms. However, the lemmatization procedure should be refined in future studies. At the time the lemmatization procedure was implemented, the profile indicator terms for the association profiles had not been identified and could not have been until the project was well past the lemmatization stage. Some of the profile indicator terms should have been lemmatized. However this problem was overcome by combining the different forms of the profile indicator terms in the profile tabulations. The three profile indicator terms affected were cost, patient, and need. In addition, the

lemmatization procedure could not differentiate between plural terms that were

single word terms and those that were part of multi-word terms such as

"standard," "standards" and "standards of care." The lemmatization procedure

achieved what it was designed to accomplish -- the counting of multiple forms of

terms . In future studies, a rule-based lemmatization procedure should be

developed to replace the simple identification approach. In a rule-based

procedure, terms would be lemmatized only in the absence of specific co-

occurring terms.

In the 85 key domain terms, there were terms unique to nursing, terms

used more generally in health services administration, and terms borrowed from

other fields, usually from management and economics. Terms from nursing

included nursing intensity, head nurse, nursing activities, nursing acuity, and

nursing care plan. Terms used originally in health services administration and

medicine included acute care, ambulatory care, severity of illness, standards of

care, and medical record. Terms from management and economics included

human resource management, job satisfaction, shared governance, span of control,

cost effectiveness, and reimbursement. Three terms from the information sciences

were computer system, information, and information system. With the

importance of information management in nursing, more key terms from the

information sciences are expected to be reflected in the nursing administration

lexicon in the future. Terms borrowed from other fields are valuable for

understanding the many dimensions of nursing administration. As more

interdisciplinary collaboration and research with experts in related fields is

undertaken, new useful terms for the field will be identified and added to the lexicon of nursing administration.

The International Nursing Index (INI) is one of the major indexes for nursing but less than one-half of the 85 key terms were found in the INI. The main implication of this deficit is the inability to index and retrieve some portions of the knowledge content of nursing administration. Examples of key terms not found in the INI are acuity, care plan, case mix, continuing education, discharge planning, human resources, nursing costs, and nursing hours.

All 85 key terms were related to the concepts in the frame of reference for the study. Most terms pertained to several of the concepts. For example, standards of care guide the organization and production of care and are used in the evaluation of the outcomes of care. Comparing the key domain terms found in the study with the domain terms in the frame of reference, the categories represented least often by the 85 key terms included those of health, disease, equity, and community which have been discussed as deficits in the knowledge-base of nursing administration (Henry, in press). The word "health" occurred frequently, but largely as a descriptor of professionals, services, and organizations: for example as in health care providers, health care services, and health care organizations. However, few citations were found that could provide a useful definition of health or that referred to people's specific health needs. The term "disease" was rarely used although several references were found to AIDS. The concept of equity was used only in reference to pay equity or equitable salaries for nursing personnel and not, for example, in terms of distributive justice for health

services. The term "community" was rarely used. The context of nursing

administration in the journals used for the study is largely acute care hospitals and

this was apparent in the terms. It was difficult to define the terms, using the

concepts in the listings, for nursing administration in any other setting than

hospitals. In a personal conversation with one of the journal editors, the limited

attention to nursing administration where the population of concern is the

community and not hospitalized patients, for example in public and community

health services, was described as problematic and in need of change.

Definitions of Terms

In this section, first, the clarity and precision of the meanings of the

nursing administration terms in print are discussed. Second, the definitions

developed in the study are compared to the frame of reference. Analysis of the

methods and the limitations of the words and definitions conclude with

recommendations for practice and inquiry.

In the general narrative of the practice literature, there was little discussion

by authors about the meaning of terms. Occasionally, but rarely, an explicit

definition was found. One of the few statements about the meaning of a term was

by Williamson and Johnson (1988) in Nursing Management who wrote "The

word productivity may be one of the most overused, yet least understood, terms in

healthcare today" p. 49. Without discussion of the meaning of terms, knowledge

in a field cannot advance. In the publications analyzed for the study, generally

there was little or no discussion about the problems of imprecise meaning. Terms are used as if meanings are understood and shared.

"Professional nurse" was imprecisely used. Some authors seemed to mean any registered nurse with a license and others meant or described only nurses with baccalaureate education. "Quality of care" was used as if there was universal understanding and agreement about its meaning and significance. However, critical indicators of quality were not delineated. General concepts that affect quality were mentioned such as continuity and integration of care. An example of a term defined unclearly in the literature is "quality of care" which is defined as "maintaining or improving the health status of a homogeneous subset of recipients of care, conceptualized as a cluster of values and health status indicators" (Curtis & Simpson, 1985, p. 14). No citations were found to discern if quality in nursing administration is understood as innate excellence, consumer satisfaction, conformance to standards , or some combination of these.

Discussions in the sampled publications were sufficiently focused. But the discussions and analysis showed little variety and depth, therefore other sources including unabridged dictionaries and reference books were required to develop the definitions. This paucity of in-depth content suggests that a larger database will be required in future lexigraphic studies. It may also reflect a narrow focus in the topics selected for publication or limited knowledge in the field. As noted, the terms and discussions predominantly related to hospital-based nursing administration. There was little mention about nursing administration from a community, national, or international perspective. Little was found concerning

nursing administration in specialty clinics, nursing homes, and public health units. In addition, standards of care were addressed only from the perspective of institutional standards. Mention of professional and community standards of care were not found. Even home care, which is community based, was discussed largely in terms of hospitals rather than in terms of the health needs of individuals and communities. No mention of designing healthcare programs based on social and epidemiological indicators of community health needs was found.

The frame of reference included equity as a key concept. Equity is fair treatment of individuals and communities without bias, favoritism, fraud, and undue inconvenience. Historically, equity has been valued in nursing but the term was found only one time, and that was in reference, as noted previously, to equity of pay. Discussions were not found addressing equity in healthcare access, distribution, and treatment. A parallel concept, values, was rarely mentioned. Distribution activities in nursing administration were largely unmentioned except for an occasional mention of the economical distribution of nurses to hospital units using acuity indicators. Discussion of the distribution of services based on health needs in the communities served or on the principle of equity were not found.

Terms and discussions frequently focused on economy and productivity. This would be expected in a journal such as Nursing Economics which is dedicated to financial matters but the articles in other journals were also focused heavily on financial concerns. The relative frequency of terms such as diagnosis related groups, productivity, reimbursement, and nursing costs reveal the wide-

spread concern in the healthcare industry and in nursing administration with economics and efficiency. *The cost dimension of patient classification, length of stay, and discharge planning and personnel staffing, turnover, and retention were also prominent.* The focus on costs is indicative of increased financial pressures, the influence of the discipline of business administration on nursing science, and the increased influence of business managers in hospitals. Some institutions have hired non-nurse managers with degrees in business administration to replace nurse executives. This is due, in part, to a lack of qualified nurses trained for these top positions with both nursing and management expertise.

The term "healthcare" was found in three different forms--healthcare, health care, and health-care. The first, healthcare, was used for this study. Some authors use the more encompassing term "healthcare" when they could have used and seemed to mean the more specific term "nursing care." As noted from the taxonomy, the term "healthcare" is used more often in discussions of the costs of care. "Nursing care" is used more often in discussions of the delivery of care, and "patient care" is used more often in discussions of managing or monitoring care.

Nursing shortage was mentioned in about one-tenth of the articles. Discussions in the publications largely focused on increasing the supply, retaining nurses and decreasing turnover. Discussions of programs to reduce demand or to define nursing personnel supply needs in terms of health needs were not found.

Safety concerns also were mentioned infrequently in the sample publications. Safety of patients from avoidable accidents or incompetent practitioners were rarely described. The safety of nursing personnel was rarely

mentioned, yet nurses encounter numerous hazards in handling carcinogenic drugs, from anesthesia leakages, communicable diseases, and exposure to radiation. Working overtime and insufficient personnel were defined as productivity or morale problems but not in terms of increased errors and accidents. Protection of nurses from dangerous patients and harassment were not mentioned. Risk management, although a responsibility in nursing administration, was rarely described.

The KWIC listings were not as useful for the development of the definitions as first thought because of the inadequacies discussed above. However, valuable information was gained in the creation of the definitions from analyzing how authors used the terms. As noted, other resources, such as reference books, manuals, and unabridged dictionaries, were also used to develop the definitions. In addition, the development of term frequency listings for each KWIC listing was valuable for creating the definitions. The listings were used as a resource for the selection of terms in defining and describing entry terms. The influence of individual author's styles was reduced by the averaging effect of each frequency listing. Thus the terms used most often by the most authors were found at the top of the list and helped the investigator couch the definitions in the language of nursing administration. For future studies, the limitations of KWIC listings should be recognized and procedures to overcome their limitations should be developed including the use of nurse administrators in developing and evaluating definitions.

Taxonomy of Nursing Administration Terminology

The indicator terms in the association profile provided data for an acceptable clustering solution. However, future refinements are strongly recommended if more precise taxonomies are to be developed. Using a series of analysis studies, the indicator terms contributing the most to differentiation can be discovered and new indicator terms found. Perhaps a useful approach would be to develop indicator concepts in which a group of terms contributes to an individual profile score. For example, instead of only the term "cost," the relative co-frequency of a number of cost-related terms such as finances, expenses, and charges would be totaled for a single score.

The advantage of using association profiles rather than co-occurrences of key terms in developing the taxonomy is illustrated by three pairs of terms grouped early in the clustering process. The first pair,"recruitment" and "retention," co-occur about one-third of their occurrences. Therefore, these two terms would have been grouped with either approach. The second pair, "diagnosis related groups" and "length of stay" are obviously closely related; a patient's hospital length of stay is related to his or her diagnosis related group. However, even though the term "diagnosis related group" occurred 656 times and "length of stay" occurred 305 times, the two terms only co-occurred 57 times in the same sentence. The third pair, "professional nurse" and "patient satisfaction" had no co-occurrences in the same sentence. Their close relationship in the taxonomy was based on the emphasis in their respective contexts to care, service,

and patient. If this close relationship is confirmed in other work, it suggests that a key contributor to patient satisfaction is an educated, professional nurse.

Additional analyses of the taxonomic work is recommended to refine the cluster analysis methodology and includes:

1. Analysis of each cluster of terms separately to determine if the terms group in a different arrangement within each cluster.

2. Analysis of the clusters two at a time to determine if changes in cluster membership occur without the influence of the other clusters.

3. Analysis of a random selection of terms from each cluster to determine if they form in the same clusters.

4. Analysis of the cluster formation of the 85 key terms in a new database of scanned publications to determine if the same clusters form.

The initial clustering procedure produced a reasonable distribution of terms but with some problems. Group 6, with only two elements--direct and indirect care -- was not equivalent with other groups and lacked diversity. Group 12 was also small with only three elements. Groups 1 and 5 were small as well. In addition, it was difficult to identify a unifying theme for some groups. The existence of four small groups suggested that the clustering beyond the .5 R^2 lower limit originally set should be continued. Therefore, further clustering, guided by the data shown in Appendix Q, was done until the four small groups were joined with larger groups. An R^2 of .3 for the cut-off resulted in a more symmetric solution with five clusters. Moreover, logical themes could then be identified. The combinations and suggested cluster names are shown in Figure 28.

Figure 28. Second clustering of 85 key terms.
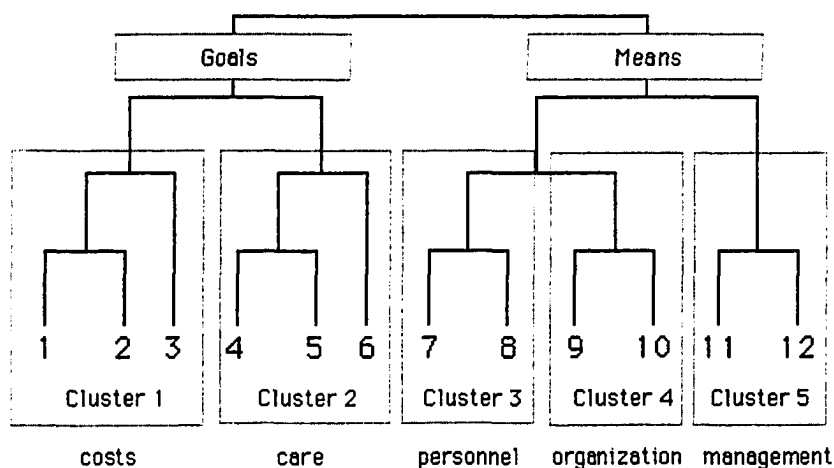
In Cluster 1 (costs) the key terms included third party, prospective

payment, nursing costs, nursing intensity, patient classification, case mix,

reimbursement, diagnosis related groups, length of stay, nursing hours, and acuity.

In Cluster 2 (care) key terms included quality of care, nursing care, discharge

planning, nursing activities, standards of care, ambulatory care, patient

satisfaction, direct care, and indirect care. In Cluster 3 (personnel) key terms

included collaboration, nurse practitioner, staff nurse, support services, nurse

administrator, job satisfaction, nursing supervisor, autonomy, continuing

education, nursing practice, nursing shortage, recruitment, retention, and turnover.

In Cluster 4 (organization) key terms included work environment, delivery

system, healthcare system, healthcare organization, organizational structure,

professional practice, nursing diagnosis, nursing process, and care plan. In

Cluster 5 (management) key terms included nurse manager, nurse executive, director of nursing, head nurse, span of control, information, computer system, implementation, staffing, productivity, and quality assurance.

The five clusters are further grouped into two larger groupings labelled "goals" and "means." Terms in the goals group refer primarily to the goals of the health and nursing services to provide care at reasonable costs. Terms in the "means group" tend to pertain more often to the personnel, organizational structures, and management activities required to achieve the goals.

Some terms in a group were more difficult to associate with the suggested cluster names than others. However, the overall themes seem justified. Further refinements to the clustering process may move some terms between groups or into new groups or clusters. The clustering algorithms force each element into orthogonal groups whereas, in reality, some terms have elements relating to several groups. Future work will be needed to refine the clusters and the suggested cluster names. Much work remains in refining the methodology and structure of the taxonomy, presented here only as a preliminary first effort in need of revision and refinement.

Comparing the clusters in the taxonomy to the frame of reference, each had a practitioner entity; and the management cluster included terms related to organization, production, and evaluation. The organization cluster most often included terms related to production and evaluation. The care cluster most often included terms related to individuals, organizational units, nursing, evaluation, and production. The cost cluster included terms related to economy, production

and evaluation. Distribution was not included because of the comparative infrequency of terms pertaining to this activity.

In conclusion, the study provided an initial analysis of the terminology of nursing administration. The numbers, types, and frequencies of terms, their meanings, and their structure were analyzed. Terminological precision in the field will be enhanced as this initial work is extended. Several closing recommendations are as follows:

1. That efforts be continued to identify from 300 to 500 key terms in nursing administration, to develop the definitions of these terms, and to refine the taxonomy.

2. That the methodology be refined to improve the lemmatization, the multi-word term identification, and the association profile procedures.

3. That a national panel of experts be used to validate the completeness of the key term list, the correctness and preciseness of the definitions, and the taxonomic relationships.

The lexicon and taxonomy provide a foundation for future theory development in nursing administration. As future studies extend the lexicon and refine the taxonomic relationships, theorists and researchers will be better positioned to develop useful theoretical frameworks and support testable hypotheses.

Rationale for Normalization Formula

$$D = 1 - \sum \frac{C_s}{t_s}$$

where D = Coefficient of Dissimilarity, C = the occurrences of common (shared) association terms (not using the entry terms in each other's association profile), t = the total occurrences of association terms, and subscript S = the occurrences of the association terms of the key term with the smallest relative number.

Rationale:

The basis of this formula is simply a part divided by the whole as in the O'Keeffe and Journet (1983) formula:

$$S = \frac{m}{m + r - i}$$

where S = similarity coefficient, m = the number of matching variants, r = the number of remaining or nonmatching variants and i = the number of impossible comparisons. Because this formula places the similarity coefficient in a ratio numeric with delimiters of 0.0 and 1.0, this formula can easily be changed into a dissimilarity coefficient by subtracting the similarity calculation from 1.0 as follows:

$$D = 1 - \frac{m}{m + r - i}$$

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Because "m + r" is really the total we can substitute with "t." The denominator is the total possible minus impossible comparisons. In the case of the normalization formula for this study, the impossible comparisons are not present because entry terms are not included in the association profile. Therefore "i" is left out resulting in:

$$D = 1 - \frac{m}{t}$$

The equivalent to the matching variants in this study are the association profile terms held in common. Therefore a "c" is substituted for the "m" in the formula.

The O'Keeffe/Journet formula is simple because the matching variants are merely counts of the variants, whereas in this study the normalization formula uses weighted variants so the formula must be applied to each variant adjusted on a relative scale. The relative scale is a ratio of the occurrence of the association term to the occurrences of the total association profile. The shared or common occurrences can only be considered the maximum number of occurrences of a particular term that both profiles share. Thus the maximum would be the occurrences of the profile with the smallest relative count. Therefore the formula can be altered to specify the smallest relative count with the subscript "s". One further step, the ratio of each common profile term must be summed. This completes the conversion of the formula.

$$D = 1 - \sum \frac{c_s}{t_s}$$

Appendix B

Article Eligibility Evaluation Form for the Study:

A Literature-Based Lexicon and Taxonomy of Key Nursing Administration Terminology

Richard Heyden, The University of Texas at Austin

Thank you for your willingness to participate in interrater reliability testing for this study. If you have any questions please phone me at 288-0178 (H) or 471-9081 (W).

Objective: To identify articles that meet criteria for inclusion in study.

Sources: Articles published from 1985 to 1990 in four journals: Nursing Management, Journal of Nursing Administration, Nursing Economics, and Nursing Administration Quarterly.

Criteria For Inclusion

1. The topics must address operational concerns in nursing administration in the U.S. Operational concerns include the production, organization, distribution, and assessment of the impact of nursing services and the practitioners and organizational units responsible for these.

2. The articles must be full length, expository pieces. Editorials, book reviews, interviews, abstracts, proceedings, and briefs should not be included.

How To Use The Recording Log

1. The log provides the journal name, volume number, issue, and year for 1985-1990. For each journal issue there are 9 to 12 sequential numbers indicating the usual number of articles

2. To save time, do not write the title of each article, just provide the page number or a few key words from the title so it is clear which article you have selected.

3. The journal names are abbreviated as follows: Nur Man = Nursing Management, JONA = Journal of Nursing Administration, Nur Eco = Nursing Economics, and NAQ = Nursing Administration Quarterly.

Thank you for assisting with this work.

Name _____

Recording Log of Qualifying Literature

Jrnl Vol. Issue.Year   Article #   Title or Page Number   .

JONA 15-1   1985

#1_____

#2_____

#3_____

#4_____

#5_____

#6_____

#7_____

#8_____

#9_____

#10_____

JONA 15-2   1985

#1_____

#2_____

#3_____

#4_____

#5_____

#6_____

#7_____

#8_____

#9_____

#10_____

JONA 15-3   1985

#1_____

#2_____

#3_____

#4_____

#5_____

#6_____

#7_____

#8_____

#9_____

#10_____

Appendix C

Article Sampler

Description

Four journals were sampled by this program and 400 articles randomly selected. The abbreviations used and what they represent are NAQ = Nursing Administration Quarterly, Nur Man = Nursing Management, Nur Ec = Nursing Economics, and JONA = Journal of Nursing Administration. The first column lists the sequential numeration of each sample. The second column lists the journal. The third column lists the year. The fourth column indicates which issue selected out of the total issues published each year. The instructions stipulate that the issue number in this column is a sequencial count of issues published each year starting with the first issue of the year therefore the issue number may not match the issue number given by the publisher if the publisher's issue number starts with an issue other than the first one of the calendar year. The fifth through the sixteenth columns indicate the randomly selected article depending on how many articles are eligible according to the criteria for inclusion. For example, in the first selection which is the April 1989 edition of Nursing Management, if there are eight articles that meet the criteria for inclusion then the sixth article is the first random selection. In the unlikely situation in which only two articles meet the criteria for inclusion then a coin flip will select the random article.

Article Sampler 1.0

Random selection of 400 articles from 1985 to 1990
From 4 Journals:
Number 1   NAQ Issued 4 times a year.
Number 2   Nur Man Issued 12 times a year.
Number 3   Nur Ec Issued 6 times a year.
Number 4   JONA Issued 11 times a year.

This output produced on 12-30-1990

#	Journal	Year	Issue	Per	Year	3	4	5	6	7	8	9	10	11	12	13	14
									Number of Articles Per Issue								
1	Nur Man	1989	4	of	12	2	4	4	1	5	6	7	8	11	7	12	10
2	Nur Ec	1986	4	of	6	1	4	1	2	7	8	5	6	8	6	4	14
3	JONA	1988	10	of	11	1	3	3	3	5	8	3	3	4	1	1	11
4	Nur Ec	1990	1	of	6	3	2	4	5	2	8	9	8	5	10	1	1
5	Nur Ec	1986	6	of	6	2	4	3	2	5	7	4	1	11	9	10	2
6	JONA	1989	2	of	11	2	2	5	5	3	1	9	5	11	6	1	4
7	Nur Man	1985	8	of	12	3	2	1	3	1	5	8	4	10	2	3	10
8	NAQ	1987	1	of	4	2	4	1	2	3	1	3	10	6	10	9	6
9	Nur Man	1986	5	of	12	1	3	5	3	3	6	5	6	10	4	5	9
10	NAQ	1988	3	of	4	3	2	5	3	1	7	9	2	6	3	1	2
11	JONA	1987	10	of	11	1	1	3	6	7	8	4	7	5	6	11	1
12	NAQ	1990	4	of	4	2	2	4	5	7	4	6	4	6	7	1	11
13	Nur Ec	1986	3	of	6	2	4	5	1	3	3	1	5	9	11	6	3
14	JONA	1988	11	of	11	1	2	5	4	4	5	3	2	5	5	12	13
15	Nur Ec	1988	2	of	6	2	1	4	1	3	8	4	10	4	6	12	4
16	JONA	1989	9	of	11	3	4	5	5	2	7	3	7	2	8	13	5
17	JONA	1986	1	of	11	2	1	4	5	6	8	4	8	8	3	1	7
18	Nur Ec	1987	6	of	6	1	3	2	4	4	8	8	9	1	11	10	2
19	Nur Ec	1985	3	of	6	1	4	2	5	6	7	1	2	4	9	1	6
20	Nur Man	1989	5	of	12	2	4	3	6	5	1	2	1	10	3	12	3
21	JONA	1988	6	of	11	2	2	2	6	1	7	5	7	1	7	1	11
22	JONA	1986	9	of	11	3	2	1	6	7	6	2	4	5	6	12	10
23	Nur Man	1986	1	of	12	2	3	4	4	7	5	6	9	3	11	2	13
24	JONA	1990	9	of	11	2	1	2	3	7	5	3	8	2	10	10	11
25	JONA	1990	8	of	11	2	4	5	5	3	4	9	7	1	10	1	1
26	JONA	1986	9	of	11	1	1	1	1	6	1	8	2	7	12	10	5
27	Nur Man	1986	1	of	12	2	1	3	2	7	2	9	8	10	4	1	2
28	Nur Ec	1986	2	of	6	2	1	3	6	6	2	1	9	7	6	1	3
29	Nur Man	1985	7	of	12	2	1	5	3	2	7	6	7	10	4	5	7
30	NAQ	1989	3	of	4	1	4	3	2	2	5	7	6	7	3	12	4
31	Nur Ec	1985	1	of	6	3	1	3	2	2	1	5	9	3	8	7	12
32	Nur Man	1988	8	of	12	3	4	2	4	4	5	1	7	2	6	12	8
33	NAQ	1985	2	of	4	3	3	4	3	1	4	7	10	3	8	13	9
34	Nur Man	1988	6	of	12	3	4	5	4	3	2	4	4	2	4	7	14
35	Nur Man	1988	11	of	12	2	4	4	5	5	4	4	3	4	1	5	6
36	Nur Man	1989	1	of	12	1	3	4	4	2	3	1	4	10	7	8	4
37	Nur Man	1989	11	of	12	2	2	2	5	3	8	5	10	1	8	7	8
38	Nur Man	1986	4	of	12	3	1	2	1	5	3	4	2	10	7	11	10

Appendix D

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Appendix E

Techniques For Data Base Management

Note: Files were grouped by journal to separate the database into smaller sections. All data-handling techniques started with an analysis of each of the 284 files and then the data was compiled, first by journal and then for the database.

Term Frequencies

1. Individual article text files were queried for word frequencies resulting in 284 term frequency output files. In each file the terms were arranged alphabetically with the term first followed by its frequency. The program used was WDFEQ (Danielson, 1987).

2. Within each journal grouping, each term and its frequency in each file was distributed to one of 21 files according to alphabetic order using Freq Comb (Heyden, 1991a). For example file one contained all terms from the Nursing Management article files that begin with "a" and which had the second letter between "b" and "j".

3. The 21 distributed files in each journal set were sorted and analyzed for duplicate terms which were then combined using Consolidate Freq (Heyden, 1991b).

4. The consolidated files from each journal group were combined in one group of 21 alphabet files and duplicate terms combined using Consolidate Lines (Heyden, 1991c).

5. Each of the 21 alphabetic files were combined in one file, the frequency
   count was then moved from following a term to preceding it. Then the
   file was sorted for a complete frequency file with descending order
   according to frequency using OneTotalFile (Heyden, 1991d).

Word Pair Frequencies

The same programs and techniques as used in Term Frequencies above
except the program used for the first query was WdPairs (Heyden,
1991e).

KWIC Listings

1. The text files were formatted using Lemmatizer 1.4 (Heyden, 1991f),
   Formatter 1.4 (Heyden, 1991g), and manual changes using MacroMaker
   1.0.2 (Denman, 1990) to set each sentence as a paragraph and place a
   space before each punctuation mark.

2. The sentences in each formatted file were numbered consecutively using
   NumPar 1.2 (Heyden, 1991h).

3. Each sentence which contains one of the identified key terms was sent to
   a new file for each article file using KWIC Diss 1.2 (Heyden, 1991i).
   This step is done in groups of 20 terms so several iterations were
   required.

4. The sentence examples were taken from each article's KWIC file and
   placed in individual files for each key term using KWIC Distribution 1.4
   (Heyden, 1991j).

5. Since the key term might be used twice in some sentences, the KWIC listings would contain two examples of each of these sentences. The duplicate sentences are removed using Duplicate KWIC Remove (Heyden, 1991k).

6. When terms are in two forms such as "quality+assurance" and "QA" the two files were combined. Once again, the term and abbreviation may be in the same sentence, therefore the combined KWIC files were checked for duplicate sentences and removed using Duplicate KWIC Check (Heyden, 19911).

Association Profiles

1. The term frequencies in the KWIC listings were determined using KWIC Freq (Heyden, 1991m).

2. Although the term frequencies were originally used as a check on system accuracy, for this procedure the KWIC frequencies were altered manually by taking out the key term and leaving only the frequency number on the first line.

3. A new set of frequency files were produced with weighted frequencies representing the occurrence of each term per 100 sentences containing the key term using Setup Weighted (Heyden, 1991n).

4. A total term frequency file was produced of the weighted frequencies with the same techniques described in numbers 2 to 5 of the above term frequency description using altered versions of the programs. This

frequency listing was used to determine the key indicator terms for the association profiles.

5. The key indicator terms were inserted in the program <u>Profile Setup 1.2</u> (Heyden, 1991o) which was used to find the 21 key indicator terms in each weighted KWIC frequency file and place all of them in one file, setup for the next stage. The program formated the data with the ID number of the KWIC frequency file followed by a space. Next were the relative frequencies for each of the indicator terms separated by a comma and in alphabetic order.

6. The setup file was analyzed with <u>Profile Matrix</u> (Heyden, 1991p) to produce coefficients of dissimilarity from paired comparisons of all profiles using the formula in Appendix A.

7. The matrix of coefficients of dissimilarity became the data input for the PROC CLUSTER program in <u>Statistical Analysis System</u> (1986) which produced the cluster analysis data output.

Appendix F

Source Codes for Select Computer Programs

WdPairs

```
5 REM ****©RICHARD HEYDEN****May 15,1991**** +1+Wd Pairs -1s******
10 REM makes word frequencies of word pairs
21 K=0
22 N$=" "
40 DIM W$(10400)
45 DIM Z$(8400)
48 DIM F$(8400)
50 DIM C(8400)
51 DIM P$(21)
52 DIM S$(174)
53 S$ = STRING$(3,32)
54 FOR I = 1 TO 9
55 READ P$(I)
56 NEXT I
57 DATA ".",",",";",":",".","!","?","","")","/"
58 P$(10) =CHR$(34)
59 P$(11) = "("
60 S1=174
61 FOR I = 1 TO S1
62 READ S$(I)
63 NEXT I
64 DATA 's),<<s),<s),a,about,above,across,after,against,al,all,along,also,although
65 DATA am,among,amonst,an,and,another,any,are,aren't,around,as,at,be,became,because
66 DATA become,becomes,been,before,being,below,between,both,but,by,can,can't,
      cannot,could,couldn't
67 DATA did,didn't,do,does,doesn't,doing,don't,done,down,during,each,else,ect,et,
      even,every,example,except
68 DATA first,for,from,given,had,has,have,having,he,her,hers,his,how,however,i,ies),
      if,in,included,increased,into,is
69 DATA it,its,less,like,made,make,making,many,may,might,more,most,much,must,
      my,needed,no,not,now,off,often,on,one,only,onto,or,other,our,ours,out
70 DATA over,rather,s,same,see,she,should,shouldn't,similar,since,so,some,table,than,
      that,the,their,theirs,them,then
71 DATA there,therefore,these,they,this,those,three,through,thus,together,two,under,
      unless,until,up,upon,use,used
72 DATA using,very,was,wasn't,way,we,were,weren't,what,when,where,which,while,
      who,why
73 DATA will,with,within,without,won't,would,you
74 INPUT;"What is first input filename (A 10000 or 50000 number)? ",FI$
75 PRINT
76 INPUT; "How many sequential files do you want to analyze?",K
77 PRINT
78 GG=K
```

```
80 of$=STR$(VAL(FI$)+10000)
81 of$="PAIRS "+RIGHT$(of$,(LEN(of$)-1))
82 OT$=STR$(VAL(FI$)+20000)
83 OT$="PAIRS "+RIGHT$(OT$,(LEN(OT$)-1))
93 PRINT
94 PRINT "Analyzing file "FI$+"        Start time: "+TIME$
96 PRINT "Making two output files, " of$" and "OT$
100 'PRINT
105 REM——————————master switcher————————————
110 FOR M = 1 TO 4
120 ON M GOSUB 131,391,590,770
130 NEXT M
131 REM
132 YY=GG-K+1
133 PRINT "Analyzing  #"YY" of "GG
140 OPEN "i",#1,FI$
160 OPEN "o",#3,OT$
170 PRINT "Making an array of words"
180 IF EOF(1) THEN RETURN
190 LINE INPUT #1,A$
200 IF LEFT$(A$,1)  =" " THEN 230
210 A$ = " " + A$
220 GOTO 200
230 IF RIGHT$(A$,1) = " " THEN 270
240 A$ = A$ + " "
250 GOTO 230
260 REM .................making word array.............................
270 A = 1
280 B = 1
290 L = LEN(A$)
300 FOR I = A + 1 TO L
310 IF MID$(A$,I,1) <> " " THEN 360
315 IF MID$(A$,I-1,1) = " " THEN 350
316 B = I
317 W$(J) = MID$(A$,A+1,B-1-A)
320 IF RIGHT$(W$(J),1)=P$(10) OR RIGHT$(W$(J),1)=P$(4) THEN W$(J) =
        LEFT$(W$(J),LEN(W$(J))-1)
322 IF LEFT$(W$(J),1)=P$(10) OR LEFT$(W$(J),1)=P$(11) THEN
        W$(J)=RIGHT$(W$(J),LEN(W$(J))-1)
323 FOR Q=7 TO 10
324 IF RIGHT$(W$(J),1)=P$(Q) THEN W$(J) = LEFT$(W$(J),LEN(W$(J))-1)
325 NEXT Q
326 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
327 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
334 E=S1
335 F=1
336 IF F<=E THEN 340
337 G=0
339 GOTO 349
340 G=INT(((E+F)/2)+.5)
341 IF W$(J) = S$(G) THEN 350
342 IF W$(J) < S$(G) THEN 345
```

```
343 F=G+1
344 GOTO 336
345 E=G-1
346 GOTO 336
349 J = J + 1
350 A = B
360 NEXT I
370 GOTO 180
380 RETURN
390 REM ....................sorting array...............................
391 PRINT "sorting words"
392 FOR x = 1 TO J - 1
393 L = LEN(W$(x))
394 FOR Q = 1 TO 6
395 IF RIGHT$(W$(x),1) = P$(Q) THEN W$(x) = "zz"
396 NEXT Q
397 IF W$(x) = "zz" THEN GOTO 413
398 IF W$(x+1) = "of" THEN W$(x) = W$(x) + N$ + W$(x+1) + N$ +
      W$(x+2):W$(x+1)="zz":W$(x+2)="zz": GOTO 408
399 IF W$(x+1) = "to" THEN W$(x) = W$(x) + N$ + W$(x+1) + N$ +
      W$(x+2):W$(x+1)="zz":W$(x+2)="zz": GOTO 408
407 W$(x)=W$(x) + N$ + W$(x+1)
408 L = LEN(W$(x))
409 FOR Q = 1 TO 6
410 IF RIGHT$(W$(x),1) = P$(Q) THEN W$(x) = LEFT$(W$(x),L-1)
411 NEXT Q
413 NEXT x
414 W$(J) = "zz"
415 N = J - 1
420 D = 4
430 IF D < N THEN 470
440 D = D - 1
450 D = INT(D/2)
460 GOTO 480
470 D = D + D
480 IF D < 1 THEN RETURN
490 FOR J = 1 TO N - D
500  FOR I = J TO 1 STEP - D
510   IF W$(I+D) < W$(I) THEN 560
520   T$ = W$(I)
530   W$(I) = W$(I+D)
540   W$(I+D) = T$
550  NEXT I
560 NEXT J
570 GOTO 450
580 REM ........................doing word frequencies..................
590 PRINT "making word frequency list"
600 T = 1
610 F$(1) = W$(1)
620 C(T) = 1
630 FOR I = 2 TO N
640  IF W$(I) <> W$(I-1) THEN 670
```

```
650  C(T) = C(T) + 1
660  GOTO 700
670  T = T + 1
680  F$(T) = W$(I)
690  C(T) = 1
700 NEXT I
710 FOR I = 1 TO T
720  x$ = STR$(C(I))
730  W$(I) = STRING$(10-LEN(x$),32)+x$+"   "+F$(I)
735  Z$(I) = x$
740 NEXT I
750 RETURN
760 REM ...................printing out word frequecies.............
770 PRINT "printing word frequencies"
780 N = I-1
790 GOSUB 420
796 PRINT #3,OT$
800 FOR I = 2 TO N
801 L = LEN(W$(I))
802 LL=LEN(Z$(I))
803 FOR Q = 1 TO 6
804 IF RIGHT$(W$(I),1) = P$(Q) THEN W$(I) = LEFT$(W$(I),L-1)
805 IF RIGHT$(Z$(I),1) = P$(Q) THEN Z$(I) = LEFT$(Z$(I),LL-1)
806 NEXT Q
817 IF Z$(I) = " 1" THEN GOTO 822
821 PRINT #3,F$(I);TAB(60);Z$(I)
822 NEXT I
830 CLOSE #1
833 CLOSE #3
834 FI$=STR$(VAL(FI$)+1)
835 FI$=RIGHT$(FI$,(LEN(FI$)-1))
836 PRINT "End time: "+TIME$
837 K = K-1
839 IF K >0 GOTO 79
842 PRINT "••••• PROCEDURE FINISHED •••••"
843 END
```

Lemmatizer 1.4

```
1 REM ****©RICHARD HEYDEN****June 19,1991**** Lemmatizer 1.4******
2 REM Formats text by lemmatizing key terms ***Revised July 7, 1991
4 K=0
5 N$=" "
6 DIM B$(100)
7 DIM S$(100)
9 DIM W$(6400)
10 DIM Z$(6400)
11 DIM F$(4400)
13 DIM P$(21)
14 DIM PP$(3)
15 DIM ST$(20):DIM BT$(20)
16 PP$(1) = "."
```

```
17 PP$(2) = "!"
18 PP$(3) = "?"
19 FOR I = 1 TO 9
20 READ P$(I)
21 NEXT I
22 DATA ".",",",";",":","!","?","","",")","/"
23 P$(10) =CHR$(34)
24 P$(11) = "("
60 S = 11
61 FOR I = 1 TO S
62 READ S$(I)
63 NEXT I
64 DATA benefits,evaluations
65 DATA practitioners,professionals,results,services,shifts
66 DATA standards,supervisors,systems,units
72 FOR I = 1 TO S
73 READ B$(I)
74 NEXT I
75 DATA benefit (s),evaluation (s)
76 DATA practitioner (s),professional (s),result (s),service (s),shift (s)
77 DATA standard (s),supervisor (s),system (s),unit (s)
83 'GOTO 94
84 PRINT:INPUT;"What is first input filename to be formatted (A 10000 number)? ",FI$
85 PRINT
86 INPUT; "How many sequential files do you want to format?",K
87 PRINT
88 GG=K
89 J = 0
90 of$=STR$(VAL(FI$)+10000)
91 of$=RIGHT$(of$,(LEN(of$)-1))
93 PRINT   :GOTO 120
94 INPUT; "Do you what to test the Lemmatizing data pairs?  (Y / N)  ",QZ$
95 PRINT
96 IF QZ$ = "Y" OR QZ$ = "y" THEN GOTO 100 ELSE GOTO 84
100 FOR I = 1 TO S
105 PRINT S$(I),B$(I)
110 NEXT I
120 PRINT "Start time: "+TIME$
130 PRINT "Formatting file "FI$
131 PRINT "Making formatted output file, " of$
132 YY=GG-K+1
133 PRINT "Analyzing  #"YY" of "GG
140 OPEN "i",#1,FI$
150 OPEN "o",#2,of$
155 OPEN "O", #3,"Temp"
160 PRINT #2, of$  ' top line number in new file
170 PRINT "Making an array of words"
180 IF EOF(1) THEN GOTO 400
190 LINE INPUT #1,A$
·200 IF LEFT$(A$,1)  = " " THEN 230
210 A$ = " " + A$
230 IF RIGHT$(A$,1) = " " THEN 270
```

```
240 A$ = A$ + " "
260 REM ................making word array...........................
270 A = 1
280 B = 1
290 L = LEN(A$)
291 FOR CH = 1 TO L
292 IF ASC(MID$(A$,CH,1))>64 AND ASC(MID$(A$,CH,1))<91 THEN
      MID$(A$,CH,1)=CHR$(ASC(MID$(A$,CH,1))+32)
293 'IF ASC(MID$(A$,CH,1))>47 AND ASC(MID$(A$,CH,1))<58 THEN
      MID$(A$,CH,1)=CHR$(ASC127)
294 NEXT CH
300 FOR I = A + 1 TO L
310 IF MID$(A$,I,1) <> " " THEN 360
315 IF MID$(A$,I-1,1) = " " THEN 350
316 B = I
317 W$(J) = MID$(A$,A+1,B-1-A)
326 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
327 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
349 J = J + 1
350 A = B
360 NEXT I
370 GOTO 180
400 PRINT "Sending data to temp file."
401 M = 1:Z = 1
402 Z$(1) = ""
405 FOR I = 1 TO J
410 Z$(M)=Z$(M)+ " " +W$(I)
414 FOR Q = 1 TO 3
415 IF RIGHT$(Z$(M),1) = P$(Q+1) THEN Z$(M) =LEFT$(Z$(M),LEN(Z$(M))-1)+"
      "+P$(Q+1)
416 IF RIGHT$(Z$(M),1) = PP$(Q) THEN Z = 2:Z$(M)=LEFT$(Z$(M),LEN(Z$(M))-
      1)+" "+PP$(Q)':GOTO 420
417 NEXT Q
418 IF Z = 1 THEN GOTO 425
420 PRINT #3, Z$(M)
421 M = M + 1
425 Z = 1
430 NEXT I
431 FOR I = 1 TO M
432 Z$(I) = ""
433 NEXT I
440 CLOSE #3
450 OPEN "i", #4, "Temp"
455 PRINT "Lemmatizing"
460 IF EOF(4) THEN CLOSE #4:GOTO 830
470 LINE INPUT #4,A$
472 IF LEFT$(A$,1) = " " THEN 475
473 A$ = " " + A$
474 'GOTO 472
475 IF RIGHT$(A$,1) = " " THEN 478
476 A$ = A$ + " "
477 'GOTO 475
```

```
478 J = 1
479 A = 1
480 B = 1
490 L = LEN(A$)
500 FOR I = A + 1 TO L
510 IF MID$(A$,I,1)<> " " THEN 580
520 IF MID$(A$,I-1,1) = " " THEN 570
530 B = I
540 F$(J) = MID$(A$,A+1,B-1-A)
550 IF LEFT$(F$(J),1)=" " THEN F$(J) = RIGHT$(F$(J),LEN(F$(J))-1)
560 J = J + 1
570 A = B
580 NEXT I
590 FOR D = 1 TO J-1
595 FOR C = 1 TO S
600 IF F$(D) = S$(C)  THEN F$(D) = B$(C)
605 NEXT C
610 NEXT D
615 N$ = ""
620 FOR E = 1 TO J-1
630 N$=N$+" "+F$(E)
635 IF RIGHT$(N$,1) = " " THEN N$=LEFT$(N$,LEN(N$)-1)
640 NEXT E
650 PRINT #2,N$
660 GOTO 460
830 CLOSE #1
831 CLOSE #2
834 FI$=STR$(VAL(FI$)+1)
835 FI$=RIGHT$(FI$,(LEN(FI$)-1))
836 PRINT "End time: " + TIME$
837 K = K-1
839 IF K >0 GOTO 89
841 PRINT "········· Procedure Finished ·········"
843 END
```

Formatter 1.4

```
5 REM ****©RICHARD HEYDEN****June 20,1991****  *Formatter 1.4  ******
10 REM Formats text by combining multi-word terms.
15 PRINT TAB(20);"### Loading data ###"
21 K=0 'REM  sets count of files at 0
26 DIM W$(5400)
27 DIM P$(21)
28 DIM S$(300)
29 DIM B$(300)
32 S = 47  'REM  the number of word pairs to combine with +
33 FOR I = 1 TO S
34 READ S$(I)
35 NEXT I
36 DATA acuity level,chemically+dependent nurse,clinical nurse+specialist
37 DATA continuing+education program,critical+care unit,direct+nursing care
38 DATA direct+nursing costs,direct+patient care,director+of nursing
```

```
39 DATA evaluation system,health+care organization,health+care system
40 DATA health+care workers,home+health care,hospital information+system
41 DATA impaired nurse,intensive care+unit,intensive care,lengths+of stay
42 DATA long-term+care facilities,middle manager,nurse practitioner,nursing
      care,nursing costs
43 DATA nursing diagnosis,nursing division,nursing information+system,nursing
      intervention
44 DATA nursing manager,nursing needs,nursing personnel,nursing system,nursing unit
45 DATA nursing+care costs,nursing+care hours,patient day,patient+care costs
48 DATA patient+care system,patient+care unit,patient+classification system
49 DATA personnel costs,prospective+payment system,quality+assurance program
50 DATA scheduling system,staffing level,third+party reimbursement,waiting time
65 FOR I = 1 TO S
66 READ B$(I)
67 NEXT I
69 DATA acuity+level,chemically+dependent+nurse,clinical+nurse+specialist
70 DATA continuing+education+program,critical+care+unit,direct+nursing+care
71 DATA direct+nursing+costs,direct+patient+care,director+of+nursing
72 DATA evaluation+system,health+care+organization,health+care+system
73 DATA health+care+workers,home+health+care,hospital+information+system
74 DATA impaired+nurse,intensive+care+unit,intensive+care,length+of+stay (<<s)
75 DATA long-
      term+care+facilities,middle+manager,nurse+practitioner,nursing+care,nursing+costs
76 DATA
      nursing+diagnosis,nursing+division,nursing+information+system,nursing+intervention
77 DATA nurse+manager
      (<ing),nursing+needs,nursing+personnel,nursing+system,nursing+unit
78 DATA nursing+care+costs,nursing+care+hours,patient+day,patient+care+costs
79 DATA patient+care+system,patient+care+unit,patient+classification+system
80 DATA personnel+costs,prospective+payment+system,quality+assurance+program
81 DATA scheduling+system,staffing+level,third+party+reimbursement,waiting+time
97 'GOTO 108 'REM  •••• take out if you want to test the parallelness of the term lists.
98 QZ$ = " "
99 PRINT "Do you want to test the format list of multi-word terms?  (Y / N)  "
100 QZ$=INKEY$
101 IF QZ$ = "Y" OR QZ$ = "y" THEN GOTO 104
102 IF QZ$ = "N" OR QZ$ = "n" THEN GOTO 108
103 GOTO 100
104 FOR I = 1 TO S
105 PRINT S$(I)+" --> "+B$(I); TAB(55); "Pair #";I: IF I = S THEN PRINT:PRINT:
      GOTO 107
106 IF I MOD 47 = 0 THEN PRINT: INPUT "      •••   Press <return> or <enter> to
      continue.  ••• ";x
107 NEXT I
108 FOR I = 1 TO 9
109 READ P$(I)
110 NEXT I
111 DATA ".",",",".",";",":","!","?","","")","/"
112 P$(10) =CHR$(34)
113 P$(11) = "("
114 INPUT;"What is first input filename to be formatted (A 60000 number)? ",FI$
```

```
115 IF VAL(LEFT$(FI$,1))<>6 THEN PRINT:PRINT:PRINT "MUST BE A 60000
       NUMBER -- ENTER AGAIN": GOTO 114
116 PRINT
117 INPUT; "How many sequential files do you want to format?",K
118 PRINT
119 GG=K
120 PRINT:A=0:B=0:J=0
121 of$=STR$(VAL(FI$)+10000)
122 of$=RIGHT$(of$,(LEN(of$)-1))
124 PRINT "Start time: " + TIME$
126 PRINT "Formatting file "FI$
128 PRINT "Making formatted output file, " of$
131 REM
132 YY=GG-K+1
133 PRINT "Analyzing  #"YY" of "GG
140 OPEN "i",#1,FI$
150 OPEN "o",#2,of$
160 LINE INPUT #1,A$
165 PRINT #2,of$
170 PRINT "Making an array of words and formatting text"
180 IF EOF(1) THEN GOTO 830
190 LINE INPUT #1,A$
200 IF LEFT$(A$,1)  = " " THEN 230
210 A$ = " " + A$
230 IF RIGHT$(A$,1) = " " THEN 270
240 A$ = A$ + " "
260 REM ................making word array...........................
265 J = 1
270 A = 1
280 B = 1
290 L = LEN(A$)
300 FOR I = A + 1 TO L
310 IF MID$(A$,I,1) <> " " THEN 360
315 IF MID$(A$,I-1,1) = " " THEN 350
316 B = I
317 W$(J) = MID$(A$,A+1,B-1-A)
326 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
327 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
349 J = J + 1
350 A = B
360 NEXT I
370 FOR D = 1 TO J-1
375 E=S
376 F=1
377 IF F<=E THEN 380
378 G = 0
379 GOTO 410
380 G=INT(((E+F)/2)+.5)
390 IF W$(D)+" "+W$(D+1) = S$(G)  THEN W$(D) = B$(G) : W$(D+1) = "":GOTO 410
395 IF W$(D)+" "+W$(D+1) < S$(G)  THEN 400
396 F=G+1
397 GOTO 377
```

```
400 E=G-1
405 GOTO 377
410 NEXT D
420 N$=""
430 FOR E = 1 TO J-1
440 N$ = N$ + " " + W$(E)
445 IF RIGHT$(N$,1) = " " THEN N$ = LEFT$(N$,LEN(N$)-1)
450 NEXT E
460 PRINT #2,N$
470 GOTO 180
830 CLOSE #1
831 CLOSE #2
835 FI$=RIGHT$(FI$,(LEN(FI$)-1))
836 PRINT "End time: " + TIME$
837 K = K-1
839 IF K >0 GOTO 120
843 PRINT "••••••••• Procedure Finished•••••••••"
844 END
```

KWIC Diss 1.2

```
5 REM ****©RICHARD HEYDEN****July 13,1991****  *KWIC Diss 1.2  ******
10 REM Finds key terms and places context sentence in output file.
15 PRINT TAB(20);"### Loading data ###"
21 K=0 'REM  sets count of files at 0
23 Q$ = "                            " ' ****45 spaces****
26 DIM W$(5400)
27 DIM P$(21)
28 DIM S$(300)
32 S = 20  'REM  the number of key words
33 FOR I = 1 TO S  '****terms must be in alphabetical order*****
34 READ S$(I)
35 NEXT I
36  '******term set #1**********
37 DATA acuity
38 DATA care+unit
39 DATA clinical+nurse+specialist
40 DATA cns
41 DATA drg
42 DATA health+care
43 DATA length+of+stay
44 DATA los
45 DATA nursing+care
46 DATA nursing+diagnosis
47 DATA nursing+process
48 DATA patient+care
49 DATA patient+classification
50 DATA patient+classification+system
51 DATA pps
52 DATA prospective+payment+system
53 DATA qa
54 DATA quality+assurance
```

```
55 DATA quality+of+care
56 DATA standard+of+care
106 P$(1) = "."
107 P$(2) = ","
108 P$(3) = ";"
109 P$(4) = ":"
110 P$(5) = "!"
111 P$(6) = "?"
112 P$(10) =CHR$(34)
113 P$(11) = "("
114 INPUT;"What is first input filename to queried (A 80000 number)? ",FI$
115 'IF VAL(LEFT$(FI$,1))<>4 THEN PRINT:PRINT:PRINT "MUST BE A 40000
       NUMBER -- ENTER AGAIN": GOTO 114
116 PRINT
117 INPUT; "How many sequential files do you want to query?",K
118 PRINT
119 GG=K
120 PRINT:A=0:B=0:J=0
121 of$=STR$(VAL(FI$)+10000)
122 of$="KWIC#1 - "+RIGHT$(of$,(LEN(of$)-1))
124 PRINT "Start time: " + TIME$
126 PRINT "Querying file "FI$
128 PRINT "Making KWIC output file, " of$
131 REM
132 YY=GG-K+1
133 PRINT "Analyzing  #"YY" of "GG
140 OPEN "i",#1,FI$
150 OPEN "o",#2,of$
160 LINE INPUT #1,A$
170 PRINT "Making an array of words and searching text"
180 IF EOF(1) THEN GOTO 830
190 LINE INPUT #1,A$
200 IF LEFT$(A$,1)  = " " THEN 230
210 A$ = " " + A$
230 IF RIGHT$(A$,1) = " " THEN 270
240 A$ = A$ + " "
260 REM .................making word array.............................
265 J = 1
270 A = 1
275 V = 0
280 B = 1
290 L = LEN(A$)
300 FOR I = A + 1 TO L
310 IF MID$(A$,I,1) <> " " THEN 360
315 IF MID$(A$,I-1,1) = " " THEN 350
316 B = I
317 W$(J) = MID$(A$,A+1,B-1-A)
326 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
327 IF LEFT$(W$(J),1)=" " THEN W$(J) = RIGHT$(W$(J),LEN(W$(J))-1)
349 J = J + 1
350 A = B
360 NEXT I
```

```
365 Y = 0
370 FOR D = 1 TO J
375 E=S
376 F=1
377 IF F<=E THEN 380
378 G = 0
379 GOTO 410
380 G=INT(((E+F)/2)+.5)
390 IF W$(D) = S$(G)  THEN Y = Y +1:X$(Y)=W$(D):V=2:W$(D) =
    "*"+W$(D):GOTO 410
395 IF W$(D) < S$(G)  THEN 400
396 F=G+1
397 GOTO 377
400 E=G-1
405 GOTO 377
410 NEXT D
415 VM = 0
420 N$=""
430 FOR E = 1 TO J  '****putting the sentence back together again
431 FOR I = 1 TO 6
432 IF W$(E) = P$(I) THEN VM = 2
433 NEXT I
434 IF VM = 2 THEN 435 ELSE 437
435 N$ = N$ + W$(E)
436 GOTO 442
437 IF LEFT$(W$(E),1) = "#" THEN W$(E) = W$(E)+"  "
440 N$ = N$ + " " + W$(E)
442 W$(E)=""
443 VM = 0
444 IF RIGHT$(N$,1) = " " THEN N$ = LEFT$(N$,LEN(N$)-1)
446 IF LEFT$(N$,1) = " " THEN N$ = RIGHT$(N$,LEN(N$)-1)
448 NEXT E
449 Q = 0
450        '*****capitalizing first letter of each sentence*******
451 IF LEN(N$) < 12 THEN 460
453 IF ASC(MID$(N$,9,1)) > 96 AND ASC(MID$(N$,9,1)) < 123 THEN MID$(N$,9,1)
    = CHR$(ASC(MID$(N$,9,1))-32)
454 IF MID$(N$,9,1) = "*" AND ASC(MID$(N$,10,1)) > 96 AND ASC(MID$(N$,10,1))
    < 123 THEN MID$(N$,10,1) = CHR$(ASC(MID$(N$,10,1))-32)
455 IF MID$(N$,9,1) = CHR$(34) AND ASC(MID$(N$,10,1)) > 96 AND
    ASC(MID$(N$,10,1)) < 123 THEN MID$(N$,10,1) =
    CHR$(ASC(MID$(N$,10,1))-32)
460 IF V = 0 THEN 469
461 FOR I = 1 TO Y
462 PRINT #2,X$(I)+RIGHT$(Q$,45-LEN(X$(I)))" -- "+FI$+"   "+N$
463 X$(I) = ""
464 NEXT I
469 V = 0:X$="":Y = 0:N$=""
470 GOTO 180
830 CLOSE #1
831 CLOSE #2
834 FI$=STR$(VAL(FI$)+1)
```

```
835 FI$=RIGHT$(FI$,(LEN(FI$)-1))
836 PRINT "End time: " + TIME$
837 K = K-1
839 IF K >0 GOTO 120
843 PRINT "·········· Procedure Finished··········"
844 END
```

KWIC Distribution 1.4

```
5 REM ****©RICHARD HEYDEN****August 6,1991****  *KWIC Distribution 1.4  ******
10 REM Distributes KWIC sentences to individual files
15 PRINT TAB(20);"### Loading data ###"
21 K=0 'REM  sets count of files at 0
23 REM change for each set: 24, 25, 36-56
24 TR = 1        '****change this for the number of the term set*******
25 TR$ = "1"     '****change this for the number of the term set*******
26 DIM W$(5400)
27 DIM R$(20)
28 DIM S$(20)
29 C = (TR * 20)-20
32 S = 20  'REM  the number of key words
33 FOR i = 1 TO S  '****terms must be in alphabetical order*****
34 READ S$(i)
35 NEXT i
36             '*******term set #1**********
37 DATA acuity
38 DATA care+unit
39 DATA clinical+nurse+specialist
40 DATA cns
41 DATA drg
42 DATA health+care
43 DATA length+of+stay
44 DATA los
45 DATA nursing+care
46 DATA nursing+diagnosis
47 DATA nursing+process
48 DATA patient+care
49 DATA patient+classification
50 DATA patient+classification+system
51 DATA pps
52 DATA prospective+payment+system
53 DATA qa
54 DATA quality+assurance
55 DATA quality+of+care
56 DATA standard+of+care
80 FOR i = 1 TO 20
81 V = i+C
82 V$ = STR$(1000+V)
83 T$="Term #"+V$
84 OPEN "a",#i,T$
85 NEXT i
114 INPUT;"What is first input filename to distribute (A 90000 number)? ",FI$
```

```
116 PRINT
117 INPUT; "How many sequential files do you want to distribute?",K
118 PRINT
119 GG=K
120 PRINT:A=0:B=0:J=0
124 PRINT "Start time: " + TIME$
126 PRINT "Distributing file "FI$
128 PRINT "Making KWIC 20 output files. "
129 AFI$ ="KWIC#"+TR$+" - "+FI$
131 REM
132 YY=GG-K+1
133 PRINT "Analyzing  #"YY" of "GG
140 OPEN "i",#21,AFI$
180 IF EOF(21) THEN GOTO 830
190 LINE INPUT #21,A$
191 'PRINT A$
210 FOR i = 1 TO 20
220 L = LEN(S$(i))
230 IF MID$(A$,1,L)=S$(i) THEN PRINT #i,A$
240 NEXT i
470 GOTO 180
830 CLOSE #21
834 FI$=STR$(VAL(FI$)+1)
835 FI$=RIGHT$(FI$,(LEN(FI$)-1))
836 PRINT "End time: " + TIME$
837 K = K-1
839 IF K >0 GOTO 120
840 FOR i = 1 TO 20
841 CLOSE #i
842 NEXT i
846 PRINT "········· Procedure Finished···········"
847 END
```

Profile Setup 1.2

```
5 REM ****©RICHARD HEYDEN****September 21,1991****   PROFILE setup 1.2 ******
10 REM Finds profile terms and sets up for profile comparisons
15 PRINT TAB(20);"### Loading data ###"
21 K=0 'REM  sets count of files at 0
26 DIM W$(5400)
27 DIM B(5400)
28 DIM S$(30)
29 DIM C(30)
31 DIM U$(30)
32 S = 23  'REM   the number of terms to set for profile
33 FOR I = 1 TO S
34 READ S$(I)
35 NEXT I
36 DATA  problem,care,clinical,cost,costs,role,organization,hospital,need
37 DATA  practice,standard,nurse,nurses,nursing,patient,patients,staffing,service
38 DATA  staff,work,system,time,unit
114 INPUT;"What is first input filename to be profile formatted (A 3000 number)? ",FI$
```

```
116 PRINT
117 INPUT; "How many sequential files do you want to format?",K
118 PRINT
119 GG=K
120 PRINT:A=0:B=0:J=0
121 of$="Profile listing"
122 AFI$ = "Alt(weighted)  "+FI$
124 PRINT "Start time: " + TIME$
126 PRINT "Formatting file "FI$
128 PRINT "Appending to output file,   " of$
131 REM
132 YY=GG-K+1
133 PRINT "Analyzing  #"YY" of "GG
140 OPEN "i",#1,AFI$
150 OPEN "a",#2,of$
165 PRINT
170 PRINT "Making an array of words and formatting text"
180 IF EOF(1) THEN GOTO 270
190 LINE INPUT #1,A$
191 A = A + 1
200 B(A) = VAL(RIGHT$(A$,5))
210 Z = 0:L = LEN(A$)
220 FOR I = 1 TO L-10
230 IF MID$(A$,I,1)<>CHR$(32) THEN Z = Z+1
240 NEXT I
250 W$(A) = LEFT$(A$,Z)
260 GOTO 180
270 FOR H = 1 TO S
280 FOR Y = 1 TO A
290 IF S$(H) = W$(Y) THEN C(H) = B(Y):GOTO 320
300 C(H) = 0
310 NEXT Y
320 NEXT H
325 E = 0
330 FOR Q = 1 TO 20
335 E = E+1
340 IF E = 4 OR E = 12 OR E = 15 THEN U$(Q) = STR$(C(E)+C(E+1)):E = E +
     1:GOTO 360
350 U$(Q) = STR$(C(E))
360 NEXT Q
460 PRINT #2,FI$;
465 FOR I = 1 TO 20
470 PRINT #2,U$(I)+",";
475 NEXT I
480 PRINT #2,
830 CLOSE #1
831 CLOSE #2
834 FI$=STR$(VAL(FI$)+1)
835 FI$=RIGHT$(FI$,(LEN(FI$)-1))
836 PRINT "End time: " + TIME$
837 K = K-1
839 IF K >0 GOTO 120
```

```
843 PRINT "········· Procedure Finished··········"
844 END
```

Profile Matrix

```
5 REM ****©RICHARD HEYDEN****September 21,1991****  PROFILE Matrix  ******
10 REM Builds comparison matrix of association profiles
15 PRINT TAB(20);"### Loading data ###"
21 K=0 'REM  sets count of files at 0
26 DIM W$(5400)
27 DIM B(5400)
28 DIM S$(30)
29 DIM C(30)
31 DIM U$(30)
32 DIM D(30)
33 DIM DD(30)
34 DIM F(30)
35 DIM FF(30)
36 DIM CC(30)
120 PRINT:A=0:B=0:J=0
121 of$="Profile Matrix Set"
122 FI$ = "Profile listing"
124 PRINT "Start time: " + TIME$
126 PRINT
128 PRINT "Building Matrix"
133 PRINT
140 OPEN "i",#1,FI$
150 OPEN "a",#2,of$
160 'LINE INPUT #1,A$
165 PRINT
170 PRINT
180 IF EOF(1) THEN GOTO 215
190 LINE INPUT #1,A$
191 A = A + 1  ':PRINT A
200 W$(A) = A$
210 GOTO 180
215 B =1:C = 1:E =0
216 'PRINT A*(A-1)/2
220 'FOR I = 1 TO (A*(A-1))/2
225 FOR H = 1 TO A-B
230 X$ = W$(B)  ':PRINT X$
240 XA$ = LEFT$(X$,4)  ':PRINT XA$
250 L = LEN(X$):E = 0
253 FOR T = 5 TO L
254 E = E + 1
255 FOR I = 1 TO 3
256 O$ = MID$(X$,T+I,1)
257 IF O$ = "," THEN P = I
258 NEXT I
260 D(E) = VAL(MID$(X$,T,P))  ':PRINT D(E)
265 T = T + P + 1
270 NEXT T
```

```
271 NX=0
272 FOR I = 1 TO 20
273 NX = NX + D(I)
274 NEXT I
275 FOR I = 1 TO 20
276 DD(I) = D(I)/NX
277 NEXT I
280 FOR M = 1 TO A - B
290 Y$ = W$(B+M)
300 YA$ = LEFT$(Y$,4)
310 L = LEN(Y$):E = 0
313 FOR T = 5 TO L
314 E = E + 1
315 FOR I = 1 TO 3
316 O$ = MID$(Y$,T+I,1)
317 IF O$ = "," THEN P = I
318 NEXT I
320 F(E) = VAL(MID$(Y$,T,P))  ':PRINT D(E)
325 T = T + P + 1
330 NEXT T
331 NY=0
332 FOR I = 1 TO 20
333 NY = NY + F(I)
334 NEXT I
335 FOR I = 1 TO 20
336 FF(I) = F(I)/NY
337 NEXT I
338 REM Comparing two lines
339 HH = 0
340 FOR I = 1 TO 20
350 IF DD(I) < FF(I) THEN CC(I) = DD(I) ELSE CC(I) = FF(I)
360 HH = HH + CC(I)
370 NEXT I
380 PRINT #2, XA$+"/"YA$+" CofD = "+STR$(1-HH)
780 NEXT M
788 PRINT #2, "————————————"
790 B = B + 1
800 NEXT H
830 CLOSE #1
831 CLOSE #2
836 PRINT "End time: " + TIME$
837 K = K-1
843 PRINT "•••••••• Procedure Finished•••••••••"
844 END
```

Appendix G

Methodology Flow Charts

Methodology Flow Chart- Phase I: Lexicon

Actions & Programs   **Status of Data Base**

Conversion into ASCII Text

Journal Articles as published

Journal Articles in computer files

WdFreq program

X2

WdPairs

Formatter program   277+47

Ordered Word Frequency Listing

Alphabetized Word Listing

Lemmatizer program
29

Adjusted text files

WdFreq program

Adjusted Ordered Word Frequency Listing

Select Key Terms   1800

Key Term List   85

KWIC_Diss program

Adjusted text files

WdFreq program

KWIC Listings

KWIC Frequency Listing   ---▶ (Phase II: Taxonomy)

Develop the Definitions

Lexicon with Definitions

Methodology Flow Chart- Phase II: Taxonomy

Actions & Programs   *Status of Data Base*

(from Phase I: Lexicon)

KWIC Frequency Listings

Setup Weighted program

Weighted KWIC Frequency Listings

Indicator Term identification ← Total Listing

Profile Setup program

Association Profiles
from KWIC Listings

Profile Matrix program

Symmetrical Matrix

SAS (proc Cluster)
program

Cluster Analysis

Taxonomy
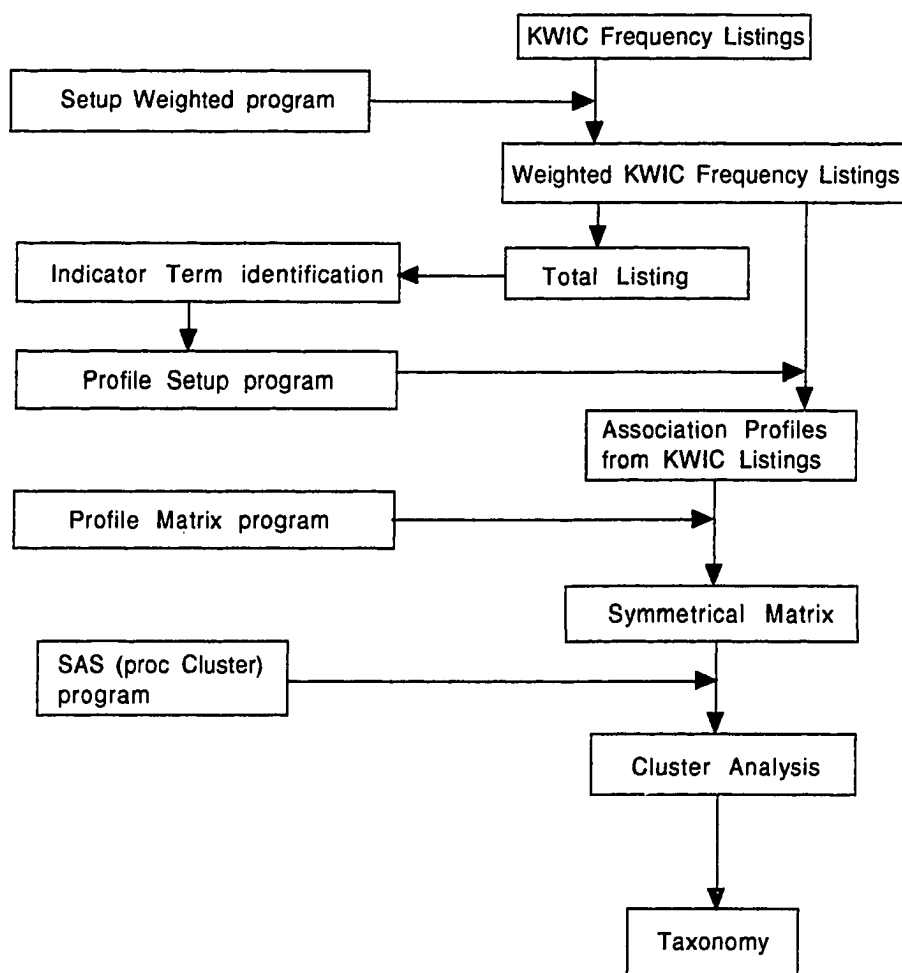
Appendix H

Stop Word List of 171 Words from the WdFreq Computer Program

a	become	ect	into
about	becomes	else	is
above	been	et	it
across	before	even	its
after	being	every	less
against	below	example	like
al	between	except	made
all	both	first	make
along	but	for	making
also	by	from	many
although	can	given	may
am	can't	had	might
among	cannot	has	more
amonst	could	have	most
an	couldn't	having	much
and	did	he	must
another	didn't	her	my
any	do	hers	needed
are	does	his	no
aren't	doesn't	how	not
around	doing	however	now
as	don't	i	of
at	done	if	off
be	down	in	often
became	during	included	on
because	each	increased	one

only	some	thus	were
onto	table	to	weren't
or	than	together	what
other	that	two	when
our	the	under	where
ours	their	unless	which
out	theirs	until	while
over	them	up	who
rather	then	upon	why
same	there	use	will
see	therefore	used	with
she	these	using	within
should	they	very	without
shouldn't	this	was	won't
similar	those	wasn't	would
since	three	way	you
so	through	we	

Lemmatization Terms

A Literature-based Lexicon and Taxonomy
of Nursing Administration Terminology

Richard Heyden

The following list of words are the most frequent terms that have more than one form in the nursing administration literature. Most of the words are singular and plural but a few also are found in the possessive form. This list of words was limited to those from the 1000 most frequent terms because it provides a sufficient number to consider but does not present a list too large for the needs of this study as would a complete list of all words with multiple forms.

You are asked to <u>circle</u> the group of words that, from your knowledge of the nursing administration literature, may be either key nursing administration terms or part of multi-word terms. A key nursing administration term addresses specific concerns as noted in the following definition of nursing administration.

<u>Nursing Administration</u> is the organization, production, and distribution of quality nursing care with attention to economy, efficiency, and equity for individuals and communities. Administering nursing services also includes the assessment of care, practitioners, and the organizational units responsible for the care delivered. Nursing, health, and disease are central to the delivery of quality nursing care services.

Organization involves assessing the health care needs of individuals and groups in the community served, planning for personnel and the services to be offered, and designing the organizational structure that will produce, distribute, and assess the services. Production is acquiring and managing financial, human, and technological resources to efficiently implement the organization and plan for cost-effective patient services. Distribution is the apportionment and dispersal of health and nursing care to individuals and communities. Assessment is the evaluation of nursing care, of nursing personnel, and organizational units, programs, and the total nursing organization.

The terms identified as possible key domain terms will be lemmatized which means they will be formatted so the root word can be identified by the computer program. The goal is to identify terms that have special importance to nursing administration therefore general purpose words should not be circled such as way and ways. The numbers following the terms indicate the frequency of the term in a data base of about 691,000 terms.

Words in multiple forms from the 1000 most frequent terms

Name_____

action	217		consumers	95
actions	131			
			day	401
activities	670		days	253
activity	199			
			demand	112
administrator	238		demands	111
administrators	557			
			department	742
agencies	148		departments	357
agency	204			
			diagnoses	91
area	322		diagnosis	142
areas	397			
			director	349
behavior	331		directors	166
behaviors	154			
			drg	356
benefit	151		drgs	326
benefits	289			
			effect	176
budget	379		effects	165
budgets	100			
			effort	145
case	252		efforts	189
cases	145			
			employee	448
categories	260		employees	560
category	226			
			evaluation	461
center	401		evaluations	84
centers	130			
			example	499
change	607		examples	87
changes	479			
			executive	384
charge	142		executives	339
charges	196			
			expense	106
client	102		expenses	124
clients	183			
			experience	393
component	126		experiences	100
components	116			
			facilities	138
concept	242		facility	147
concepts	102			
			factor	211
concern	146		factors	432
concerns	114			
			families	112
consumer	89		family	226

finding	80		number	671
findings	237		numbers	128
function	179		**nurse**	153
functions	230		**nurse's**	171
			nurses	773
goal	225			
goals	438		nursing	412
			nursing's	90
group	717			
groups	428		objective	101
			objectives	194
hospital	383			
hospital's	203		order	277
hospitals	276		orders	110
increase	374		**organization**	820
increases	113		**organization's**	84
			organizations	428
individual	534			
individuals	239		outcome	138
			outcomes	215
institution	291			
institutions	201		patient	88
			patient's	320
intervention	112			
interventions	106		physician	295
			physicians	527
interview	94			
interviews	102		position	502
			positions	362
job	653			
jobs	125		**procedure**	196
			procedures	300
level	717			
levels	479		product	274
			products	118
manager	544			
manager's	89		professional	828
managers	721		professionals	180
meeting	180		program	862
meetings	151		programs	591
member	163		rate	264
members	538		rates	172
method	220		reason	95
methods	180		reasons	147
model	512		record	180
models	117		records	108
month	107		relationship	359
months	185		relationships	273

resource	214	studies	333
resources	547	study	86
response	152	supervisor	252
responses	144	supervisors	147
responsibilities	174	**system**	523
responsibility	365	**systems**	709
result	318	task	368
results	417	tasks	277
role	787	time	697
roles	206	times	167
service	748	today	104
services	106	today's	84
setting	321	tool	301
settings	202	tools	104
shift	295	type	311
shifts	113	types	235
situation	207	**unit**	402
situations	145	**units**	758
skill	168	value	207
skills	409	values	261
specialist	84	variable	118
specialists	85	variables	233
standard	245	wage	87
standards	424	wages	90
step	166	year	241
steps	88	years	432

Thank you for your help!

Note: The bold terms are the ones the raters selected for lemmatization.

High Frequency Term Pairs

A Literature-based Lexicon and Taxonomy
of Nursing Administration Terminology

Richard Heyden

This research project is designed to identify key terms in nursing administration by their frequency in the literature. Some terms consist of more than one word. A frequency listing of all the pairs of words in the data base is attached. Please circle the pair of terms that you believe should be treated as one term or part of a multi-word term with more than two words. The criteria for identifying multi-word terms follows:

1. The combined words name an entity distinct from any single word in the group. (always)
2. Another word cannot be substituted for any word in the group without changing the meaning of the entire term. (always)
3. There is a one word synonym for the multi-word term. (sometimes)
4. The multiple words in the term perform the same syntactic function as a single word that appears to be a near synonym (usually).

Be careful that the multi-word unit is not just an adjective and noun. It must name a distinct entity rather than a "type of" some entity. Also, note that the terms should address nursing administration concerns and not be just generic phrases such as "amount of time."

Some thought also should be given to the affect of combining terms. For example if acuity has a frequency of 100, as it is combined with other terms such as patient+acuity, acuity+system, and acuity+indicators, it loses its position of importance related to other key terms because the frequency of the word "acuity" will be much less than the original frequency. In each case, one must ask, "Are we talking about different entities or one -- acuity?"

.

Total Word Pairs

644	patient care	80	care unit	45	care provided
599	nursing care	77	intensive care	45	acuity level
561	health care	76	patient day	44	shared governance
325	nursing staff	76	continuing education	44	patient outcomes
266	staff nurses	76	care services	44	care requirements
230	nurse executives	76	care plans	43	standards of care
222	nursing practice	74	data collection	43	staffing levels
210	nurse managers	73	nursing education	43	quality care
199	patient classification	73	ambulatory care	42	nursing shortage
169	decision making	71	nurse administrator	42	classification systems
168	nurse manager	71	care system	41	period of time
155	head nurses	70	care needs	41	patient days
153	nursing costs	69	nursing intensity	41	nursing managers
152	quality assurance	69	care hours	41	directors of nursing
150	length of stay	68	work group	41	delivery system
146	nurse executive	67	time spent	40	work environment
146	head nurse	66	per day	40	surgical procedure
143	nursing department	66	patient acuity	40	professional practice
140	staff members	66	nursing hours	40	professional nurses
135	task force	65	hours of care	40	patient family
129	nurse administrators	65	care costs	40	organizational structure
124	nursing services	63	long-term care	40	japanese management
120	quality of care	62	medical staff	40	care providers
119	job satisfaction	62	data collected	39	unit level
114	per patient	61	nursing profession	39	top management
114	nursing units	61	information system	39	registered nurse
110	care delivery	60	prospective payment	39	indirect care
109	nursing administrators	60	nursing process	39	hospital setting
108	classification system	59	direct care	39	assessment center
107	staff nurse	59	care activities	38	total nursing
107	nursing administration	56	per drg	38	time frame
101	acute care	56	direct nursing	38	staff development
100	discharge planning	52	information systems	38	span of control
99	nursing unit	51	cost per	38	nursing organization
99	medical center	50	quality patient	38	nursing division
99	care units	50	home care	38	nurse specialists
98	nursing personnel	50	direct patient	38	home health
98	care plan	50	care facilities	37	to determine
96	primary nursing	49	working conditions	37	services provided
96	nursing service	49	primary nurse	37	professional nurse
94	clinical nurse	48	patients admitted	37	nursing activities
93	nursing research	47	vice president	37	data base
93	director of nursing	47	nursing departments	37	care settings
88	registered nurses	47	magnet hospitals	36	severity of illness
88	critical care	47	clinical practice	36	nursing supervisor
87	nursing management	46	support services	36	nursing leaders
85	hours per	46	policies procedures	36	nursing home
85	et al	46	nurse specialist	36	nursing cost
84	professional nursing	46	hospital nursing	36	nurses more
80	hospital administrators	45	patient satisfaction	36	management team

Two Word Terms Used in Formatting The Database

acuity levels
acute care
administrative nursing
administrative practice
administrative support
agency nurses
ambulatory care
ancillary departments
assertiveness training
audit tool
business plan
care delivery
care hours
care management
care plan
care planning
care plans
care professionals
care provider
care providers
care requirements
care system
care unit
career ladder
case management
case mix
charge nurse
chemically dependent
chief executive
classification data
classification instrument
classification system
classification tool
clinical assessment
clinical ladder
clinical nursing
clinical practice
clinical specialist
clinical specialists
collaborative practice
collective bargaining
comparable worth
computer system
conceptual framework
continuing education
continuity+of care
cost accounting

cost center
cost containment
cost effective
cost effectiveness
cost per
cost savings
cost+of care
cost+of nursing
costs per
credentials review
critical care
critical indicator
critical indicators
daily patient
decision making
delivery system
delivery+of nursing
department+of nursing
diagnosis related
direct care
direct nursing
direct patient
director+of nursing
discharge planning
division+of nursing
drg system
education program
emergency department
emergency room
error rate
evaluation tool
executive officer
head nurse
health care
health problems
health promotion
health services
health status
home care
home health
hospital administration
hospital administrator
hospital nursing
hours per
hours required
hours worked
hours+of care

hours+of nursing
human resource
indirect care
indirect costs
infection control
information system
informed consent
inservice education
intensity index
job description
job performance
job satisfaction
joint commission
knowledge base
labor force
labor+and delivery
legal counsel
length+of stay
level+of care
level+of nursing
levels+of nursing
levels+of practice
licensed practical
long-term care
management information
management team
market share
marketing plan
medical care
medical record
medical records
medical staff
medication errors
middle management
middle managers
needs assessment
nurse administrator
nurse aides
nurse consultant
nurse executive
nurse manager
nurse practice
nurse retention
nurse shortage
nurse specialist
nurse specialists
nurses association

nursing activity
nursing acuity
nursing administration
nursing administrator
nursing assistants
nursing care
nursing cost
nursing department
nursing diagnoses
nursing home
nursing homes
nursing hours
nursing intensity
nursing interventions
nursing leaders
nursing leadership
nursing management
nursing managers
nursing organization
nursing practice
nursing process
nursing productivity
nursing research
nursing resource
nursing service
nursing services
nursing shortage
nursing staff
nursing standards
nursing supervisor
nursing supervisors
nursing systems
nursing time
nursing workload
operating budget
organizational culture
organizational goals
organizational structure
orientation program
participative management
patient acuity
patient care
patient census
patient classification
patient day
patient education
patient load
patient outcomes
patient population
patient populations
patient satisfaction
patient teaching

payment system
peer review
per day
per diem
per patient
per unit
per week
performance appraisal
physical therapy
plan+of care
practice model
practice patterns
preadmission testing
primary care
primary nursing
problem solving
product line
professional development
professional growth
professional nurse
professional nursing
professional practice
professional staff
professional standards
prospective payment
prospective reimbursement
public health
public relations
quality assurance
quality care
quality circles
quality surveillance
quality+of care
quality÷of life
quality+of nursing
registered nurse
related groups
responsibility charting
risk management
role model
service line
severity+of illness
shared governance
sick leave
skill levels
span+of control
staff development
staff meetings
staff member
staff mix
staff nurse
staffing levels

staffing patterns
standard+of care
standards+of care
standards+of nursing
strategic planning
substance abuse
support service
support services
support systems
systems department
task force
team building
team members
third party
third-party reimbursement
trauma care
trauma center
troubled employee
turnover rate
turnover rates
unit secretaries
utilization review
vacancy rate
vacancy rates
work environment
work force
work group
work groups
work load
work sampling
work setting
zero base

Second Iteration: High Frequency Term Pairs

A Literature-based Lexicon and Taxonomy
of Nursing Administration Terminology

Richard Heyden

This research project is designed to identify key terms in nursing administration by their frequency in the literature. Some terms consist of more than one word. A frequency listing of all the pairs of words in the data base was produced and 277 two word terms were identified. After the first 277 two word terms were identified, they were all changed in the data base by placing a "+" between each word so the computer would treat them as one term, for example "patient+classification." This document is designed to identify three word terms that should be included in the search for the key terms, however some of the two word terms not previously identified may be circled if you feel they should be included. The criteria for identifying multi-word terms follows:

1.   The combined words name an entity distinct from any single word in the group. (always)
2.   Another word cannot be substituted for any word in the group without changing the meaning of the entire term. (always)
3.   There is a one word synonym for the multi-word term. (sometimes)
4.   The multiple words in the term perform the same syntactic function as a single word that appears to be a near synonym (usually).

Be careful that the multi-word unit is not just an adjective and noun. It must name a distinct entity rather than a "type of" some entity. Also, note that the terms should address nursing administration concerns and not be just generic phrases such as "amount of time."

Some thought also should be given to the affect of combining terms. For example if quality+assurance has a frequency of 100, as it is combined with other terms such as quality+assurance+committee, quality+assurance+activity, and quality+assurance+program, it loses its position of importance related to other key terms because the frequency of each multi-word term using quality+assurance will be much less than the original frequency. In each case, one must ask, "Are we talking about different entities or one -- quality+assurance?"

Second Iteration: High Frequency Term Pairs

Name _____

160	nursing unit		26	nurse staffing
108	nursing costs		26	motivating potential
84	medical center		26	management practices
73	primary nurse		26	hospital setting
70	nursing personnel		26	health+care system
60	magnet hospital		26	faculty member
57	nursing diagnosis		26	data base
52	clinical nurse+specialist		26	committee member
51	patient+classification system		25	unit level
49	new manager		25	policies procedure
48	data collection		25	patient family
47	surgical procedure		25	nursing patient+classification
47	part-time nurse		24	role expectation
47	p <		24	nursing+care hours
47	acuity level		24	nurse practitioners
46	per drg		24	memorial hospital
44	nursing education		24	intensive care+unit
44	n =		24	agency nurse
43	drg category		23	waiting time
42	work excitement		23	unit b
40	statistically significant		23	task identity
40	significant difference		23	patient+care system
40	japanese management		23	nursing+care costs
37	working conditions		23	nursing intervention
36	vice president		23	nursing director
36	patients admitted		23	new york
35	nursing manager		23	mentoring relationship
34	top management		23	labor costs
34	team member		23	hermann hospital
34	significant differences		23	excellent companies
33	health+care organization		23	employed nurse
33	diagnosis es		22	unit hostess
32	per+patient day		22	strong memorial
32	p =		22	rural hospital
32	faculty practice		22	quality patient+care
32	data collected		21	va nurse
31	direct+patient care		21	staffing needs
31	community hospital		21	oral analgesic
31	assessment center		21	new jersey
30	time spent		21	forms management
30	role expectations		20	system department
29	united states		20	skill level
29	staffing level		20	salary expense
29	procedure category		20	quality+assurance committee
29	director of nursing		20	positive relationship
28	nursing division		20	patient+classification tool
28	general hospital		20	nursing+research program
27	teaching hospital		20	nursing leader
27	patient+care unit		20	middle manager
27	life flight		20	mental health
27	flight nurse		20	hospital charge
26	nursing profession		20	family member

Appendix M

Second Iteration: Two and Three Word Terms

Three Word Terms and Additional Two Word Terms

Used In Formatting The Database

acuity level
chemically+dependent nurse
clinical nurse+specialist
continuing+education program
critical+care unit
direct+nursing care
direct+nursing costs
direct+patient care
director+of nursing
evaluation system
health+care organization
health+care system
health+care workers
home+health care
hospital information+system
impaired nurse
intensive care+unit
intensive care
lengths+of stay
long-term+care facilities
middle manager
nurse practitioner
nursing care
nursing costs

nursing diagnosis
nursing division
nursing information+system
nursing intervention
nursing manager
nursing needs
nursing personnel
nursing system
nursing unit
nursing+care costs
nursing+care hours
patient day
patient+care costs
patient+care system
patient+care unit
patient+classification system
personnel costs
prospective+payment system
quality+assurance program
scheduling system
staffing level
third+party reimbursement
waiting time

Appendix N

Key Term Selection:

A Literature-based Lexicon and Taxonomy of
Nursing Administration Terminology

Attached is a list of terms in descending order of frequency from nursing administration literature. You are asked to examine the list and circle the terms that have **special meaning or importance to nursing administration.** A term has **special meaning** when it is given a different meaning for nursing administration than in general use, which is often the case for multi-word terms such as "quality assurance." For this study, the most valuable terms will be the ones that have less than universal understanding. For example, nearly everyone will agree what the term "registered nurse" means but many will be uncertain what "acuity" means. A term is **important** if it is used to name or describe an area of nursing administration that is central to the work of nurse administrators as defined below.

> Nursing Administration is the organization, production, and distribution of quality nursing care with attention to economy, efficiency, and equity for individuals and communities. Administering nursing services also includes the assessment of care, practitioners, and the organizational units responsible for the care delivered. Nursing, health, and disease are central to the delivery of quality nursing care services. Organization involves assessing the health care needs of individuals and groups in the community served, planning for personnel and the services to be offered, and designing the organizational structure that will produce, distribute, and assess the services. Production is acquiring and managing financial, human, and technological resources to efficiently implement the organization and plan for cost-effective patient services. Distribution is the apportionment and dispersal of health and nursing care to individuals and communities. Assessment is the evaluation of nursing care, of nursing personnel, and organizational units, programs, and the total nursing organization.

> Background. - This study is designed to identify and define the 100 most important domain terms in the nursing administration literature. The data base was built from 284 randomly selected articles from leading nursing administration journals. Multi-word terms have been combined by substituting a "+" for the space between words and multi-form words have been lemmatized by identifying and isolating the root word. Following these two procedures, the entire data base of 691,000 words was analyzed for word frequencies. A stop word list of 171 high frequency functional words that were of no interest to the study was used to eliminate these words from the frequency list. The top 1800 terms in the resultant list along with their frequency are enclosed for your evaluation.

Name of Evaluator _____

Total Word Frequencies from Nursing Administration Data Base

4445	nurse	583	important	393	significant
3657	hospital	581	support	391	average
2954	s	574	specific	390	plan
2725	nursing	572	level	387	related
2022	patients	543	medical	381	communication
1791	unit	536	institution	379	appropriate
1721	system	534	member	376	analysis
1652	staff	514	evaluation	375	increase
1632	time	511	standard	374	others
1570	patient	507	high	373	general
1447	service	504	development	368	reported
1345	care	502	position	367	potential
1330	program	501	experience	364	necessary
1231	organization	499	nurse+manager	363	part
1224	data	497	procedure	362	positions
1199	work	495	category	359	found
1179	new	491	staffing	358	supervisor
1119	ies	488	environment	358	assessment
1118	such	485	changes	356	agency
1096	problem	477	day	354	clinical+nurse+specialist
1090	study	476	developed	352	responsibility
1014	employee	473	personnel	351	quality
986	management	472	center	350	several
936	information	470	ability	349	period
917	process	467	cost	348	action
827	individual	465	issue	347	head+nurse
823	department	458	total	345	director
820	needs	456	budget	344	concept
803	manager	453	people	341	review
795	need	452	available	337	involved
791	activity	445	education	334	studies
787	physician	444	job	334	develop
784	costs	443	required	331	determine
761	role	441	staff+nurse	331	behavior
747	health+care	439	benefit	330	higher
739	result	438	organizational	329	financial
711	well	435	factors	329	current
701	patient+care	434	years	325	implementation
674	number	428	committee	324	productivity
669	practice	426	identified	324	patient's
665	percent	426	different	323	working
663	goal	424	health	322	area
656	drg	424	decisions	318	following
649	nursing+care	417	shift	318	charge
647	resource	415	nurse+executive	315	approach
641	group	413	control	314	per
632	relationship	411	provided	313	positive
632	professional	411	performance	312	type
629	provide	410	skills	311	treatment
624	research	407	groups	307	addition
609	change	404	include	306	differences
607	registered+nurse (rn)	402	planning	305	length+of+stay (los)
594	based	400	areas	305	effective
589	clinical	398	nursing+staff	298	setting
588	model	394	major	296	four

Appendix O
Key-Word-In-Context Listing for Quality Assurance

Note: The five diget number is the article file the sentence comes from. The "#--"
followed by a number is the number of the sentence within the article. In the
sentence, the key term has a "*" to set off the key term.

quality+assurance   -- 81006 #--117 With respect to
       *quality+assurance, the system's capability for monitoring utilization of
       standardized patient+care plans provides a means for evaluating the suitability
       of the present nursing diagnostic taxonomy in a tertiary care setting.
quality+assurance   -- 81012 #----3 A coordinated and integrated
       quality+assurance+program requires a method through which
       *quality+assurance activity (ies) are routed to eliminate any duplication of
       effort, and to address those problem (s) not yet solved.
quality+assurance   -- 81012 #----4 Too often, *quality+assurance
       activity (ies) have focused on problem (s) that already have occurred.
quality+assurance   -- 81012 #----7 Moreover, *quality+assurance
       activity (ies) traditionally are undertaken only by the higher levels+of
       administration; staff most affected by the actual problem rarely are involved in
       the problem's resolution.
quality+assurance   -- 81012 #---10 In conjunction with the hospital
       ('s) *quality+assurance committee, generic screens for the nursing+department
       were formulated see exhibit i).
quality+assurance   -- 81012 #---22 The sheet is then filed in the
       nursing *quality+assurance manual under that date.
quality+assurance   -- 81012 #---26 Before we started the nursing
       quality+surveillance committee, two major *quality+assurance activity (ies)
       already were in progress: 1 the problem-focused audits conducted in
       critical+care areas; 2 the innovative triad system.
quality+assurance   -- 81012 #---47 In other cases, the problem was
       addressed directly by the committee and referred to the hospital
       *quality+assurance coordinator.
quality+assurance   -- 81019 #---52 In public hospital (s),
       head+nurse (s) spent time primarily in 1 orientation/staff development; 2 staff
       scheduling and 3 *quality+assurance *qa activity (ies).
quality+assurance   -- 81022 #----3 In an effort to streamline and
       improve personnel evaluation (s), as well as affect the quality+of+care delivered
       to patients, the nursing *quality+assurance committee of an acute psychiatric
       service developed a formal, structured documentation evaluation+system des as
       part of the primary+nursing system already in place.
quality+assurance   -- 81022 #---23 The *quality+assurance
       committee proposed a plan for merging the two system (s).

quality+assurance   -- 81022 #---62 The *quality+assurance committee is hopeful that the major effects of the quarterly reviews will increase the quality+of+nursing care and of documentation.

quality+assurance   -- 81033 #---54 Contact was maintained with other department (s) involved in regular review of charts—medical records, *quality+assurance, utilization+review and the medical+staff nursing+staff feedback came from return of evaluation forms which were included in the information packets.

quality+assurance   -- 81033 #---70 Moreover, the quality+of the charting has improved, as evidenced by *quality+assurance scores and by many positive comments from physician (s) and ancillary department (s) see table i).

quality+assurance   -- 81034 #---63 *Quality+assurance is a jcah requirement.

quality+assurance   -- 81035 #----2 I did this primarily as a *quality+assurance project, part of my responsibilities on a 65-bed surgical unit with an average daily census of 45 patients.

quality+assurance   -- 81035 #---73 The data summary sheet of exhibit i is subtitled *quality+assurance: hppd for 4 levels+of care.

quality+assurance   -- 81035 #---96 The equations of exhibit ii show how the data of the summary sheets in exhibit i are used to calculate quickly the number of required daily hours+of+care for a particular *quality+assurance goal one of the four levels+of care and for a particular census level.

quality+assurance   -- 81036 #---38 She also advised upon procedure development, care+planning, and *quality+assurance activity (ies).

quality+assurance   -- 81039 #---39 Skin care task+force: a skin care task+force consisting of the head+nurse 7-3), assistant head+nurse n, enterostomal therapy nurse, *quality+assurance coordinator and the assistant director+of+nursing for the area was developed.

quality+assurance   -- 81043 #--167 The system has enhanced the ability of the hospital as a whole to expect and achieve a higher level+of *quality+assurance than was ever possible in a manual mode of operation.

quality+assurance   -- 81044 #--101 *Quality+assurance is now being monitored by both disciplines.

quality+assurance   -- 81045 #---51 The various documentation elements of this nursing+care model meet the goal (s) of a nursing+care plan and provide data for concurrent and retrospective *quality+assurance activity (ies).

quality+assurance   -- 81047 #----3 Described below is a system designed to promote staff+nurse involvement in *quality+assurance activity (ies).

quality+assurance   -- 81047 #---16 Nursing *quality+assurance nqa focuses on two endeavors: checking achievement of standard (s) and solving patient+care problem (s).

Appendix P

Top Portion of Symmetric Matrix of Coefficients of Dissimilarity

(66 coefficients of the 3570 total)

```
0
.4728  0
.5059 .4723  0
.4972 .3082 .3583  0
.4313 .5024 .2306 .4237  0
.3432 .3455 .2649 .2472 .3001  0
.5570 .4888 .6135 .4373 .6926 .4762  0
.4632 .3541 .5273 .3258 .5631 .3696 .2922  0
.3862 .2643 .4144 .2297 .4348 .2225 .4110 .3590  0
.4761 .3581 .3074 .3201 .3977 .2753 .4561 .3589 .2857  0
.5877 .5056 .3272 .3505 .4561 .4285 .6013 .5428 .3719 .4813  0
```

Ward's Minimum Variance Cluster Analysis

Root-Mean-Square Distance Between Observations   = 0.440731

Number of Clusters	Clusters Joined		Frequency of New Cluster	Semipartial R-Squared	R-Squared
84	PRCR	INFO	2	0.001047	0.998953
83	CL84	NURSTAF	3	0.001613	0.997340
82	PROFNURS	PTSAT	2	0.002021	0.995319
81	JOBSAT	NURSUP	2	0.002109	0.993210
80	NURPRA	STAFNUR	2	0.002259	0.990950
79	RECRUIT	RETENT	2	0.002302	0.988649
78	HEALTHC	NURSERV	2	0.002333	0.986316
77	SUPSERV	NURADR	2	0.002546	0.983770
76	IMPLEM	NURMANT	2	0.002548	0.981222
75	CL83	NURMANR	4	0.002604	0.978618
74	NURCR	QOFC	2	0.002857	0.975761
73	CL79	TURNOV	3	0.002890	0.972871
72	STAFFING	PTPOP	2	0.002897	0.969974
71	PCS	NURUNIT	2	0.003139	0.966836
70	CL78	REIMBUR	3	0.003155	0.963681
69	NURHRS	ACUITY	2	0.003166	0.960514
68	PRODU	HDNUR	2	0.003222	0.957292
67	DRG	LOS	2	0.003259	0.954033
66	DIREC	ORGSTRUC	2	0.003259	0.950774
65	PROFNURG	NURADN	2	0.003408	0.947366
64	NUREXE	DON	2	0.003434	0.943932
63	CL71	INFOSYS	3	0.003785	0.940147
62	NURPROC	DELIVSYS	2	0.004020	0.936128
61	PRIMNUR	CRITCR	2	0.004076	0.932051
60	HLTHCORG	CLINPRAC	2	0.004092	0.927959
59	CL64	CL68	4	0.004236	0.923723
58	QA	CL76	3	0.004269	0.919454
57	CL82	HOMECR	3	0.004324	0.915130
56	NURDIAG	CRPLN	2	0.004760	0.910370
55	CL81	AUTON	3	0.004801	0.905569
54	SHARGOV	COMPSYS	2	0.004802	0.900768
53	NURCOSTS	NURINT	2	0.004843	0.895925
52	CNS	AMBCR	2	0.004905	0.891020
51	CL60	WRKENVIR	3	0.005108	0.885912
50	DIRCR	INDIRCR	2	0.005208	0.880704
49	CL74	DP	3	0.005249	0.875455
48	CL75	CL72	6	0.005305	0.870150
47	CL80	CL77	4	0.005312	0.864838
46	ANCILL	NURDIV	2	0.005377	0.859461
45	CL62	PTOUTC	3	0.005394	0.854067
44	CAREU	PTDAY	2	0.005653	0.848414
43	COLLAB	NURPRAC	2	0.005958	0.842456

42	CL63	NURRES	4	0.006235	0.836220
41	CL66	PROFPRAC	3	0.006375	0.829846
40	MEDREC	SEVOILL	2	0.006474	0.823372
39	HUMRES	SPANOFC	2	0.006489	0.816883
38	PPS	CL53	3	0.007023	0.809860
37	CL67	CL69	4	0.007060	0.802800
36	CL57	ACUTCR	4	0.007188	0.795612
35	CL48	CL59	10	0.007383	0.788230
34	CL49	NURACT	4	0.007797	0.780432
33	CL56	CL45	5	0.007837	0.772595
32	CL58	CL65	5	0.007878	0.764717
31	CL42	CASEMX	5	0.008136	0.756581
30	NURSHORT	CL73	4	0.009692	0.746889
29	CL34	SOFC	5	0.009784	0.737105
28	CL47	CL43	6	0.009843	0.727262
27	CL38	THIRDPAR	4	0.010167	0.717096
26	CL32	CL39	7	0.010301	0.706795
25	CL61	CL55	5	0.010573	0.696221
24	CL70	CL31	8	0.011029	0.685192
23	CL30	CE	5	0.012324	0.672868
22	CL37	CL40	6	0.012434	0.660434
21	CL52	CL29	7	0.012530	0.647904
20	CL41	NURRESO	4	0.012979	0.634925
19	CL36	LONGTCR	5	0.013484	0.621441
18	CL51	CL20	7	0.014164	0.607277
17	CL26	CL46	9	0.014170	0.593108
16	CL33	HLTHCSYS	6	0.015318	0.577789
15	CL54	COSTEFFE	3	0.016689	0.561101
14	CL35	CL17	19	0.018330	0.542771
13	CL44	CL21	9	0.019596	0.523175
12	CL28	CL25	11	0.020511	0.502665
11	CL24	CL27	12	0.022753	0.479911
10	CL12	CL23	16	0.023872	0.456039
9	CL13	CL19	14	0.024029	0.432010
8	CL14	CL15	22	0.027439	0.404571
7	CL9	CL50	16	0.035679	0.368892
6	CL16	CL18	13	0.036440	0.332452
5	CL22	CL11	18	0.036774	0.295678
4	CL6	CL10	29	0.040693	0.254984
3	CL7	CL5	34	0.043375	0.211609
2	CL4	CL8	51	0.076182	0.135427
1	CL3	CL2	85	0.135427	0.000000

Dendrogram of Taxonomy
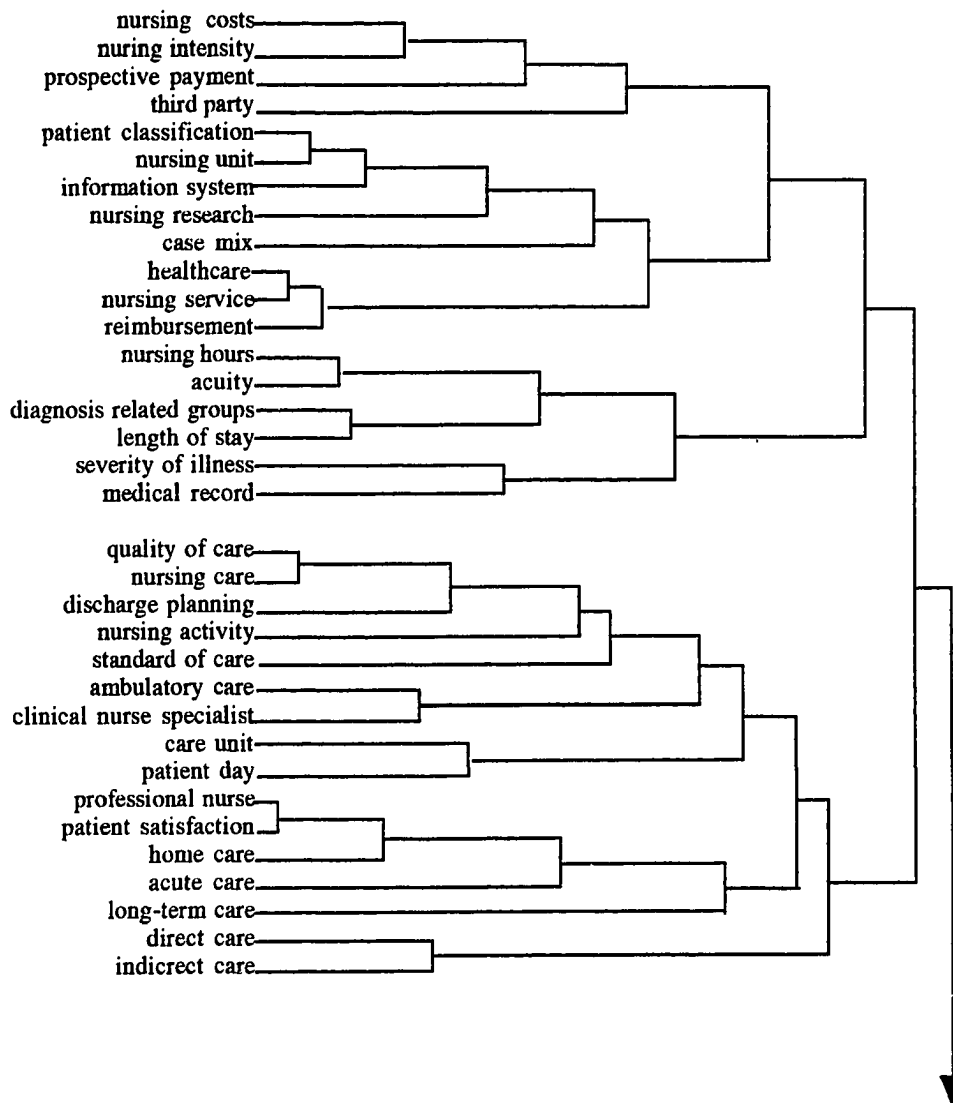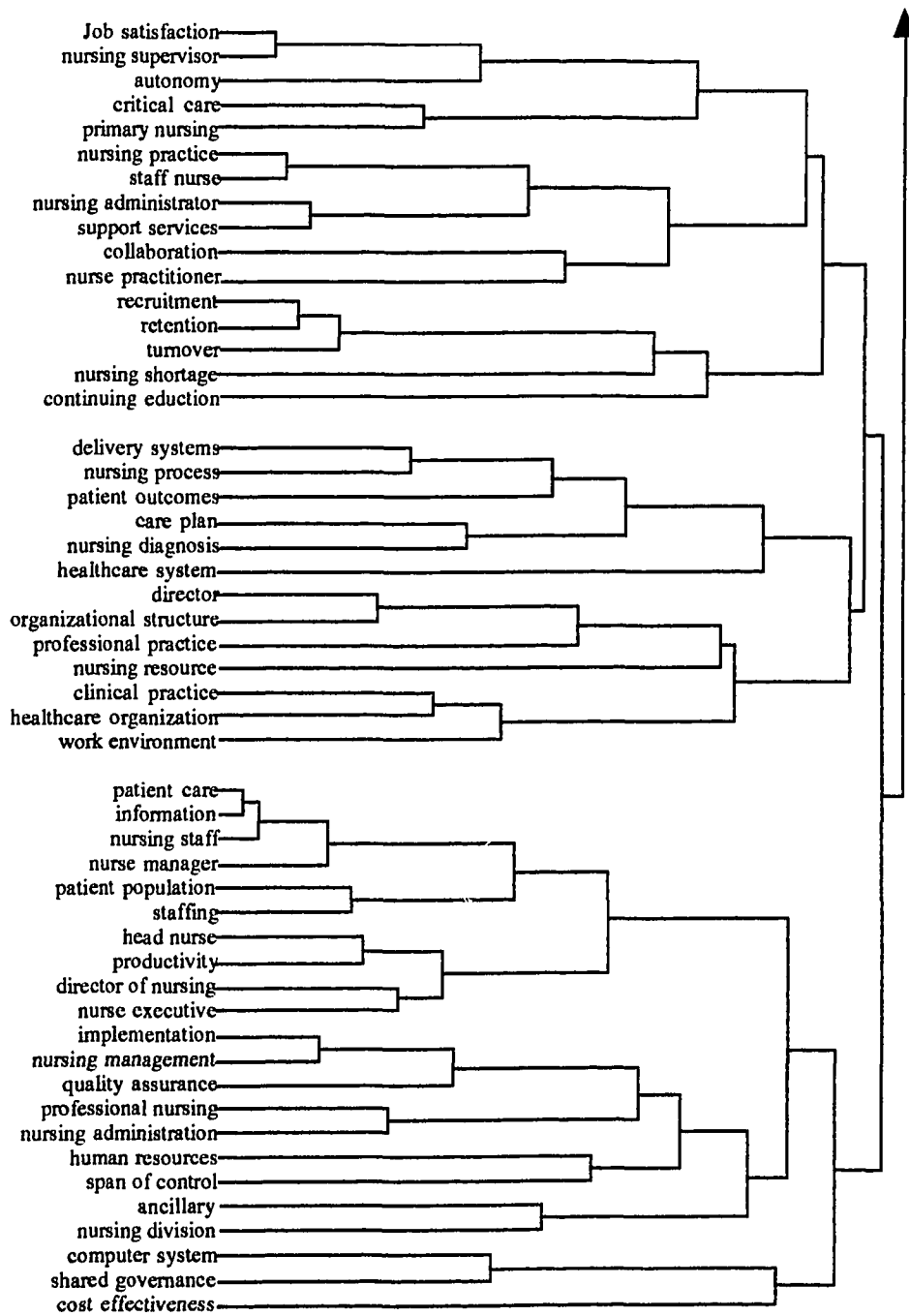
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VITA

Richard Frankie Heyden was born in Rock Springs, Wyoming, on June 19,
1947, the son of Gene Erdman Heyden and Ophie Ossa DaPron Heyden. After
completing his work at Walla Walla Valley Academy in 1965, he entered Walla Walla
College, both institutions in his home town of College Place, Washington. He received
the degree of Bachelor of Music from Walla Walla College in June 1969. For the next
four years he was the music department chairman at Columbia Academy, Battle
Ground, Washington. During the summer of 1973 he moved to The Republic of
Singapore as music department chairman of Far Eastern Academy. He received the
degree of Master of Music at the University of Oregon August of 1976. In 1979 he
joined the faculty at Pacific Union College, Angwin, California as a children's music
and woodwind specialist. During summers he worked on a Doctor of Musical Arts at
the University of Oregon and a Kódaly Teaching Certificate at Holy Names College,
Oakland, California. The latter was completed in August, 1982. With Pacific Union
College along with many other colleges facing a serious enrollment and financial crisis,
he decided to change careers. He completed an Associate of Science in Nursing in
1985 and a Bachelor of Science in Nursing in 1986, both at Pacific Union College.
After working at St. Helena Hospital, Deer Park, California and Austin State Hospital,
Austin, Texas, he entered the Graduate School of The University of Texas at Austin in
1987. During his graduate study he became a computer consultant to the nursing
administration office at Brackenridge Hospital in Austin.

Permanent address: 213 S.E. 12th Avenue
                      College Place, Washington 99324

This dissertation was typed by the author.