A Report of an Invitational Conference

Nursing Management Minimum Data Set
(nmmds)

monograph

Connie Delaney, PhD, RN
Diane Huber, PhD, RN
and The University of Iowa Nursing Management Minimum Data Set Research Team

A Collaborative Project between The University of Iowa Nursing Management Minimum Data Set Research Team and the American Organization of Nurse Executives
A Nursing Management Minimum Data Set (NMMDS): A Report of an Invitational Conference

MONOGRAPH

A Summary of an Invitational Conference

January 18-20, 1996

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1996
The American Organization of Nurse Executives is pleased to partner with the two researchers, Diane Huber, PhD, RN and Connie Delaney, PhD, RN, who have dedicated their scholarship to the study of nursing service data elements. The publication of this monograph marks an important stage in the development of a new set of nursing service data elements, appropriate for the paradigm shifts in integrated care delivery systems. The purpose of the monograph is to present what has been developed thus far. It is recognized that information in this monograph will undergo continued change through implementation and testing and through adaptation to ongoing changes in health care delivery. All parties in this endeavor have committed themselves to continuing and improving this important work.
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FORWARD

Marjorie Beyers, PhD, RN, FAAN

Nursing’s unique contribution to health is taking on new meaning and interpretation as health care delivery changes. Nurses are providing care with interdisciplinary teams and as individual practitioners in every aspect of care delivery. In the current highly competitive, business-oriented health care system, multiple discrete inputs to care delivery are counted or measured in some way.

Data analysis provides essential information for not only business decisions about care, but most importantly about the quality and access of health care delivery. This first national dissemination and survey request of The Nursing Management Minimum Data Set provides the new data definitions needed for the discrete measurement and analysis of the nursing component of health care.

The Nursing Management Minimum Data Set (NMMDS) was developed from a research base and a framework about nursing care delivery. The research base is critical to ongoing development and the validity and reliability of the data elements. The framework is critical to understanding key factors that influence the measurement and analysis of nursing care. In addition, the framework allows development of a common language for nursing management data, appropriate to care provided in any setting. This universality of data is essential in today’s health care environment, in which care outcomes are measured not only in each discrete aspect of care, but also for the integrated care delivery, across settings, and over time.

Common language connects the members of the nursing and health care community within an
information-sharing network. The rich history of nursing has always focused on individuals and wholeness. Integrated care delivery and managed care approaches have provided a new context in which nurses can put the theories of nursing to work. For the first time, a nursing management data set, as presented in this monograph, identifies common elements for the nursing care context in any setting and interprets them in relation to the distinctly different aspects of the particular care situation. The common elements can be measured across settings and interpreted according to the defining characteristics of care delivery in specific settings. These common elements then can be measured to demonstrate the nursing component alone or as a part of a broader whole of health care outcomes.

The framework for this new Nursing Management Minimum Data Set consists of the following:

- Essence of nursing: measured in critical thinking and care delivery processes
- Context of care: identified in setting and client specific aspects
- Environment of care: identified in financing and care delivery plans

Of necessity, data elements that reflect nursing practice are selected to represent the essence of nursing, which is a complex intertwining of the presence, analytic thinking, emotion and care processes that make up the experience of any care encounter or series of encounters. The context of care describes the overall setting or experience in which care takes place, such as home, acute care, long term care, ambulatory or alternative care sites. The environment is the community and life-style aspects of health that influence client and family need and resources, and their relationship to health care.
This Nursing Management Minimum Data Set work is the initial step to move from specific and differentiated data sets for nursing care in different settings toward identifying the commonalities of care across settings, and measuring the care and resource inputs within each setting and across two or more settings. Nurses in executive practice, in testing and refining this data set, are contributing to development of data elements that can then be used for producing information, benchmarking and analysis of the cost/benefit of care. New questions about care efficacy and efficiency demand answers about what is the most appropriate setting, time and situation of care for individuals, groups, and communities. The data elements in this innovative Nursing Management Minimum Data Set help nurses in executive practice begin to redefine the care within the new contexts in the constantly changing environment.

This Nursing Management Minimum Data Set is being introduced to the field in monograph form to provide a year-long opportunity to examine the data elements, use and refine them in specific applications in every setting, and to build the knowledge base about management of nursing care, so important to the continuous improvement and development of nursing care delivery within integrated health care systems. During the next few years, the steps that nurses take to define and articulate information about the nursing component of care will have significant impact on the continued redefinition of health care. This monograph is a work in progress, and you are invited to become a designer and facilitator with colleagues around the world.
PREFACE

JoEllen Goertz Koerner, PhD, RN, FAAN

As health care reform sweeps through this country, the critical task of nursing and all other health professions is to express its unique contribution to people's health. Various data sets have been established by national, regional, and local organizations and associations to address the cost, quality, and access aspects of health care delivery. In our highly competitive, business-oriented health care system, multiple discrete entities are counted and measured. Comparisons are then made against benchmarks to determine efficacy and value. What is missing from this information is clear consideration of the context in which the work is unfolding.

Nursing leaders recognize that health care is about people; those receiving care AND those providing care within a specific context. The rich history of nursing has always focused on people and wholeness, noting that the context and environment has a strong influence on an individual's, family's and community's health. Nursing theorists such as Martha Rogers, Margaret Newman and Rosemary Parse focus strongly on the environment as a vital element in health and wholeness. Contemporary quantum physics also demonstrates that matter is simply energy. The context influences the manifestation of this energy into wave or particle form. Thus, the context and the element are inseparably connected; it is the relationship between the two that forms reality.

It has been an exciting undertaking to watch the partnership between nursing research and education and nursing service carefully craft the Nursing Management Minimum Data Set that is being set forth in this document as a data set concerning context. The many iterations that
led to its creation focused on contemporary work in the field as well as possibilities existing in the contextual arena. Essentially, all cost, quality, and access studies and conclusions are compromised without the contextual elements also being considered. The uniqueness of the NMMDS is that it brings about the possibility of combining both the context and the element of nursing care to give more comprehensive examination and analysis to the questions that arise as health care restructuring unfolds.

While the NMMDS is about capturing the context of care delivery, focus must also continue on capturing its inseparable complement, the element of the essence of nursing. Essence, the aspect of something that is most true, real, and substantial, is the fullness of a person’s true nature and identity. The fullness of spirit is permanently present and is the center and source of the individual’s life and action, which others come to know and experience in every encounter. Nursing essence is a quality of presence, a calm and collected presence that transcends physical, emotional, and mental intelligence. This presence beyond words, ideas and specific action, takes charge and carefully acts unhampered by other’s thoughts and actions in moments of crisis, bliss, or even system chaos. In a world defined by categories of analytic thought, emotion, and physical sensation, essence is not recognized or articulated because people tend to focus on the concrete or the felt. The conditioned Western mind is crowded by gross comparisons rather than being sensitized to the subtlety of essence.

As the field of nursing leadership continues to utilize the framework provided in this seminal model, a common language will emerge for the discipline. Common language connects the members of a community into an information-sharing network with formidable collective powers. As this work and work to capture the essence of nursing mature, our expression of
nursing's unique contribution to health care will become more articulate in economic as well as professional language. The synergy of our shared expressions regarding nursing's contribution, which is essential as redefinition of work continues on a global scale, will strengthen our place at tables of decision-making.

This document is an exciting beginning; however, there is more work to be done. As we capture the essence and context, we can focus on the inter-connectedness of both. It is in this knowledge that the truly unique contribution of the profession becomes visible. It is in this knowledge that the professionals' significant encounters with the souls of those they are privileged to serve are known. By combining the 'doing' and 'being' aspects of our work, the meaning and purpose of human living will be disclosed.
With Contributions From

**The Nursing Management Minimum Data Set Research Team**
Peg Mehmert, MSN, RN
Sally Bachman, RN, MBA, CNAA
Marilyn K. Bedell, MSN, RN, OCN
Karen Bossard, MPH, RN
Donna Fosbinder, DNSc, RN
Heidi Nobiling, MA, MBA, RN
Phyllis Schultz, PhD, RN, FAAN
Janet Specht, PhD, RN

**The International Advisory Board**
Marjorie Beyers, PhD, RN, FAAN
Leah Curtin, DSc, RN, FAAN
JoEllen Koerner, PhD, RN, FAAN
Norma Lang, PhD, RN, FAAN
Judith A. Ryan, PhD, RN, FAAN
Franklin Shaffer, EdD, RN
Roy Simpson, RN, C, FNAP, FAAN
Joyce Verran, PhD, RN, FAAN
Judith Warren, PhD, RN, FAAN

**Consultants**
Kitty Buckwalter, PhD, RN, FAAN
Gloria Bulechek, PhD, RN, FAAN
Geraldene Felton, EdD, RN, FAAN
Marion Johnson, PhD, RN
Kathleen Kelly, PhD, RN
Frank Kohout, PhD
Meridean Maas, PhD, RN, FAAN
Joanne McCloskey, PhD, RN, FAAN
Toni Tripp-Reimer, PhD, RN, FAAN
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We gratefully acknowledge the hard work and dedication of the research assistants Cindy Scherb, Larry Schumacher, Barbara Head and Joseph Greiner. We thank Jennifer Clougherty for her excellent organizational skills and ongoing assistance. The vision and support of the American Organization of Nurse Executives has been invaluable in the refinement of this work. AONE has been instrumental in encouraging, promoting, and funding this project. Their vision gave the work legitimacy in the practice arena; their funding support greatly advanced the research work. A special thanks to Laura Kroll and Larisa Austrins for the meticulous attention to the publication process. The ongoing internal support provided by the College of Nursing has been critical to the progress of the work. We thank our colleagues at Iowa for their faith in, encouragement of, and contribution to this work. We have gratitude for the love and support of our families.
PART I: EXECUTIVE SUMMARY

The Nursing Management Minimum Data Set (NMMDS) project was begun in 1989, when the understanding of the need for a NMMDS to capture the data related to the context and support of direct health care delivery was not widely acknowledged. Subsequent changes in the health care environment have brought the need for the NMMDS to the forefront. There is general agreement that greater precision in describing, analyzing, and comparing the effects of management and administrative interventions on complex health care outcomes is essential. In response to this growing sense of urgency, the Nursing Management Minimum Data Set (NMMDS) research team at The University of Iowa partnered with AONE to hold an invitational working conference in January, 1996. This working conference was designed to refine the elements of the NMMDS.

This monograph describes the working conference, defines the elements of the NMMDS, and discusses the progress of the current NMMDS research as refined through the NMMDS-AONE partnership. It is designed to provide useful guidance as the work is implemented within nursing practice. Specifically, a strategy to pilot test the NMMDS survey instrument is included as are suggestions for development of information systems that capture the NMMDS.

Seventeen elements resulted from the deliberations of the working conference and post-conference refinements. The seventeen elements are grouped into three categories: environment, nurse resources, and financial resources (Figure 1).
Figure 1
Nursing Management Minimum Data Set ©

NMMDS

Environment
- type of nursing delivery unit/service
- patient/client population
- volume of nursing delivery unit/service
- nursing delivery unit/service accreditation
- centralization
- complexity
- patient/client accessibility
- method of care delivery
- complexity of clinical decision making

Nurse Resources
- management demographic profile
- nursing staff/client care support personnel
- nursing staff demographic profile
- satisfaction

Financial Resources
- payer type
- reimbursement
- nursing delivery unit/service budget
- expense
The nursing management data set variables most appropriately focus on the nursing delivery unit/service level; from this level data can be combined to constructed variables addressing institutional, network, system, and other aggregates. The elements and corresponding definitions for each category follow (See Tables 1-3).

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of nursing delivery unit/service</td>
<td>Unique name &amp; identification number of a center of excellence, service program, cluster by level of care, or (for now) may be called service/product line; service area where the majority of patient/client care is delivered; the first level of data aggregation beyond the patient/client care provider</td>
</tr>
<tr>
<td>Patient/client population</td>
<td>Characteristics, including specialty, development and interaction foci, of patient/client population served by nursing delivery unit/service</td>
</tr>
<tr>
<td>Volume of nursing delivery unit/service</td>
<td>Amount of provided and available service to an individual, family, group, or community/population by a nursing delivery unit/service</td>
</tr>
<tr>
<td>Nursing delivery unit/service accreditation</td>
<td>Recognition of nursing delivery unit/service by relevant accrediting body</td>
</tr>
<tr>
<td>Centralization</td>
<td>Extent to which decision-making power is distributed throughout the organization</td>
</tr>
<tr>
<td>Complexity</td>
<td>Perceived extent of internal &amp; external factors impacting the nursing delivery unit/service</td>
</tr>
<tr>
<td>Patient/client accessibility</td>
<td>Time &amp; distance required for nursing or patient/client care support personnel of the nursing delivery unit/service to reach the point of care</td>
</tr>
<tr>
<td>Method of care delivery</td>
<td>Predominant method of organizing the delivery &amp; accountability of patient/client care by the nursing delivery unit/service</td>
</tr>
<tr>
<td>Complexity of clinical decision making</td>
<td>Degree of routineness, uniformity, predictability, &amp; knowledge involved in delivering nursing care/service; consideration is given to frequency of activities and whether required procedures are well understood by providers *</td>
</tr>
</tbody>
</table>

*Verran & Reid, 1987*
### Table 2
NMMDS Variables - Nurse Resources ©

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Management demographic profile</td>
<td>Demographics of the leadership of the nursing delivery unit/service; demographics of the person, by whatever title, designated as the nurse manager with 24 hour administrative accountability over a nursing delivery unit/service; includes span of control and number of people the manager is responsible for directing, even if not under span of control in budget</td>
</tr>
<tr>
<td>Nursing staff/client care support personnel</td>
<td>Number of staff available to provide direct and indirect services to a nursing delivery unit/service population</td>
</tr>
<tr>
<td>Nursing care staff demographic profile</td>
<td>Education &amp; experience profile of nursing care staff</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Percentage of care personnel by classification who report positive or negative affect toward their job</td>
</tr>
</tbody>
</table>

### Table 3
NMMDS Variables - Financial Resources ©

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payer type</td>
<td>Type of payer for care delivered by nursing delivery unit/service</td>
</tr>
<tr>
<td>Reimbursement</td>
<td>Distribution formula/payment for services within nursing delivery unit/service</td>
</tr>
<tr>
<td>Nursing delivery unit/service budget</td>
<td>Percent of organization’s total annual itemized budget represented by the nursing delivery unit/service</td>
</tr>
<tr>
<td>Expenses</td>
<td>Direct, direct material, and indirect cost per nursing delivery unit/service per year</td>
</tr>
</tbody>
</table>

Widespread implementation of the NMMDS is crucial for the profession and assuring integrity of quality, cost, and access studies. Attendees at the 1996 Annual Meeting of the American Organization of Nursing Executives strongly affirmed the NMMDS agenda among the top priorities for 1996. We need to work together to continue to develop consensus on the measurement of the elements, participate in pilot surveys intended to test the NMMDS elements, and engage in national and regional education strategies to assure sound implementation.
PART II: WORKING CONFERENCE BACKGROUND, AIM, and METHOD

Background

Measuring the contextual factors that may influence patient outcomes, quality and cost of health care, and effectiveness is essential for comparison of delivery systems and health care plans. Knowing the effects of management and administrative interventions and quantifying characteristics of the environment within which care is delivered are essential to studies of patient/client outcomes and effectiveness. Measurement of these factors is complicated by the lack of consensus on the core variables needed to manage and compare health care services delivered across providers, sites, settings, systems, and plans. Economic survival in a managed care environment and ensuring the highest quality health care delivery require that health care providers determine what these variables are and, subsequently, collect and use that data and information for decision making.

Since 1989 the Nursing Management Minimum Data Set Research Team has made efforts to identify, define, and test the core variables needed to quantify the context within which health care is delivered. The initial development of a list of management variables was identified by a focus group of nursing management and administration experts and followed with a statewide pilot survey of nurse executives. A national Delphi study of a random sample of the American Organization of Nurse Executives membership (N=1199) was then completed to determine the necessity, clarity, and collectibility of these core variables within the acute care delivery system. Pilot studies have subsequently been conducted in long term care, ambulatory care, home health care, and occupational health settings. The need for consensus, dissemination
of the definitions and measures, and collection of the core data is urgent. The NMMDS research team at The University of Iowa and the AONE partnered to hold an invitational working conference in January, 1996 to address this need.

Several assumptions undergirded the deliberations of the working conference. It was assumed that the Nursing Minimum Data Set (NMDS), which captures the clinical care provided to patients, families, groups, and communities, would be available. Further, it was assumed that the future health care delivery model would be managed care and that health care would be increasingly provided within an interdisciplinary health care team focus encompassing a variety of health care delivery settings. All participants acknowledged that health care services must be measurable and be of the greatest quality for the least cost. Last, the group affirmed the ever increasing role and responsibility of the consumer in health care decision making.

Aim

The aim of the working conference was to promote dialogue that resulted in the identification of variables, definitions, and measures of the factors constituting the context of health care delivery. This aim was consistent with the overall project aim to develop and implement a minimum data set of management/administration variables that will quantify the context within which health care delivery and patient/client outcomes are determined.
Method

Invitations were extended to experts in nursing management and administration. A working conference brochure was developed and circulated (See Appendix A). Participants for the invitational working conference included the research team, national advisory board, consultants, invited participants, observers, and recorders (See Appendix B). A combination of invited papers and alternating small and large group meetings throughout approximately 2 days facilitated meeting the aim. The University of Iowa College of Nursing was selected as the site for the working conference to augment convenience, dialogue, and conscientious stewardship of resources. Preconference materials included the conference agenda, draft NMMDS variables, definitions, and measures, a summary of study results and issues identified to date, and background readings (See Appendix C).

Conference participation was based on several assumptions related to collegiality. The working conference brought together persons with some of the best possible intellectual and holistic views of nursing care delivery within the health care delivery system. It was imperative that each participant articulate the complex thinking required, assimilate diverse views, and forcefully and openly express him/herself. Further, it was assumed that thinking and moving from concrete examples and data to abstractions are enhanced by attentive listening. Specific guidelines for reflection and inquiry were used (See Appendix D).
PART III: INVITED PAPERS
Health Care Quality, Computer-based Patient Records, and
Integrated Delivery Systems

Judith J. Warren, PhD, RN
Clinical Nurse Researcher, University Hospital
Associate Professor, College of Nursing
University of Nebraska Medical Center

Invited Paper
Nursing Management Minimum Data Set Invitational Working Conference
January 18 - 20, 1996
Iowa City, Iowa
Health Care Quality, Computer-based Patient Records, and Integrated Delivery Systems

Einstein (1993) is credited with saying that our significant problems cannot be solved with the same type of thinking that we used when the problems were created. Quality has become the cornerstone of health care. Continuous quality improvement (CQI) is the mechanism for achieving quality. Yet the data to support the presence of quality is illusive and difficult to capture. The advent of the computer-based patient record (CPR) and integrated health care delivery systems promises to contribute to solving this challenge. For nursing, the question becomes what data elements are needed to identify and promulgate nursing’s contribution to patient outcomes and quality health care. As Einstein (1993) observed, nursing needs to use new levels of thinking to solve this significant problem. The challenge to nurse executives is to link patient outcomes to nursing resources and nursing care--what data needs to be collected across all patients to accomplish this task.

Health Care Quality

Quality

There are three characteristics of quality health care delivery: providers must perform competently, services are integrated and provided by a team, and services meet the health needs of patients and families (Wesorick, 1995). Quality health care reflects the principles of coordinated, individualized service without duplication or replication throughout the care delivery process (Donabedian, 1980, 1982). Integrated health care systems take quality very seriously as quality provides them with a market edge and assures high levels of customer satisfaction. This is the basis for implementing continuous quality improvement programs. A major problem in improving quality, though, is the lack of data or the high cost of manually assembling the information needed to conduct an analysis.
Patient Outcomes

Quality monitoring has become more sophisticated through the emphasis on patient outcomes. Even though this field is in its infancy, four domains of patient outcomes have been identified. These domains are functional status, patient satisfaction, clinical outcomes, and financial outcomes (Batalden, Nelson, & Roberts, 1994). Though instruments are being developed to measure the achievement of these outcomes, there are still weak to nonexistent linkages between these outcomes and the care delivery structures and processes used to achieve the outcomes.

Report Cards

In response to the growing need to document an agency’s quality health care performance, many public and professional organizations are proposing report cards (Nelson, Batalden, Plume, Mihevc, & Swartz, 1995). Report cards seek to identify and objectively measure the quality of care for a wide variety of purposes. The purposes are to provide information to health plan administrators or providers for internal evaluation (CQI); increase accountability of providers to regulatory agencies, consumers, and employers; assist purchasing groups in assessing value of different plans or providers; and assist consumers in choosing among health plans or providers.

ANA Nursing Report Card for Acute Care. The American Nurses Association (ANA) contracted with Lewin-VHI to review the literature and to develop a nursing report card for acute care that focused on the contribution of nursing and nurses to inpatient acute care. Twenty-one indicators were developed. Report cards, however, must balance the usefulness of data with the feasibility of data collection. ANA has selected seven indicators to test the nursing report card proposal (Pollard et al, 1995).

Patient or family satisfaction with nursing care measures a patient’s or family’s opinion of care received from the nursing staff (patient-focused outcome indicator). Pain management is defined as the reception of the counseling, medication, and physical assistance necessary for the patient to control the sensory and emotional discomfort (process of care indicator). Maintenance
of skin integrity is the extent to which nursing staff actively engage in those actions required to maintain the skin integrity of all persons admitted to the hospital (process of care indicator). Total nursing care hours worked per patient (case and acuity adjusted) measure the total number of hours of direct care provided by all nursing staff per patient day (structure of care indicator). Nosocomial infection rates, specifically UTI and pneumonia measure the rate at which catheterized patients experience urinary tract infections originating in the hospital and the rate at which patients develop inflammation of the lungs with exudation and consolidation during the course of their hospitalization (patient-focused outcome indicator). Patient injury rate measures the rate at which patients fall or incur physical injuries (unrelated to a surgical or diagnostic procedure) during the course of their hospitalization (patient-focused outcome indicator).

Assessment and implementation of patient care requirements measures the extent to which nurses working in acute care settings are performing specific components of the nursing care process: patient assessment, care planning, accurate and timely implementation of therapeutic interventions, and documentation of actions taken and direct patient care provided (process of care indicator).

Benchmarking

Benchmarking facilitates the comparison of performance to an ideal (Jennings & Westfall, 1994). This approach has one inherent problem: data comparability. Benchmarks are made against average performance, expected performance, best performance, or an articulated goal. ANA's nursing report care for acute care settings is an example of a benchmark activity against average performance for internal or external evaluations.

Support for the Computer-based Patient Record

One of the major issues in developing data elements to capture health care quality and the resources needed to provide quality health care or to compile report cards concerning quality is to be able to operationally define and to agree on the definition of the data elements and the
vocabularies used for the data element. An example will illustrate the complexity and difficulty of this issue: the data element is degree of quality; the term to be defined is "good." The dictionary definition of "good" is well-behaved (the child was good), of a favorable character or tendency, commercially sound, conforming to a standard, containing less fat and being less tender than higher grades (usually reserved for the classification of beef), pleasant, satisfactory, or deserving of respect. Synonyms for good are auspicious, skillful, excellent, just, honest, kind, virtuous, and healthful. This variety of definitions and synonyms demonstrates how different perspectives change the meaning intent of the term "good." Data elements that contribute to the constructed variable, health care quality, must have standard, single meanings in order to capture this variable. The development of a set of consensus definitions is the challenge set before the NMMDS Research Team and the American Organization of Nurse Executives (AONE) as they develop a minimum data set that reflects the core of data needed to construct the nursing minimum management data set (NMMDS).

Institute of Medicine

In 1991, the Institute of Medicine (IOM) conducted a landmark study of CPR issues and technologies (Dick & Steen, 1991). The study was the catalyst "that has driven the many significant national and international initiatives toward establishment of the CPR as the technology that can improve access to patient data, improve quality of delivery of health care, and reduce costs concurrently" (Andrew & Dick, 1995, p. 82). Many factors are contributed to the current development of the CPR: powerful, affordable hardware; point-of-care devices; increased capacity for wireless communications; cost effective magnetic and optical storage; and advances in man-machine interfaces. Health data standards, including vocabulary standards, are also receiving attention from the Computer-based Patient Record Institute (CPRI) and the Health Informatics
Standards Planning Panel (HISPP), American National Standards Planning Panel (ANSI), and other standards development organizations (see Table 1).

<table>
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<tbody>
<tr>
<td><strong>Major Organizations Involved in Health Care Information Standards</strong></td>
</tr>
<tr>
<td>American Society for Testing and Materials (ASTM)</td>
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<tr>
<td>American National Standards Institute (ANSI)</td>
</tr>
<tr>
<td>American College of Radiology-National Electronic Manufacturer's Association (ACR-NEMA)</td>
</tr>
<tr>
<td>Computer-based Patient Record Institute (CPRI)</td>
</tr>
<tr>
<td>Health Care Financing Administration (HCFA)</td>
</tr>
<tr>
<td>Health Industry Business Communications Council (HIBCC)</td>
</tr>
<tr>
<td>Health Level Seven (HL7)</td>
</tr>
<tr>
<td>Institute of Electrical and Electronic Engineers (IEEE)</td>
</tr>
<tr>
<td>Joint Commission on Accreditation of Health Care Organizations (JCAHO)</td>
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<tr>
<td>National Committee of Quality Assurance (NCQA)</td>
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<tr>
<td>National Council for Prescription Drug Program (NCPDP)</td>
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**Computer-based Patient Record Institute**

The CPRI was developed as a result of the IOM report (Dick & Steen, 1991). The CPRI is a nonprofit organization with stakeholders as the members, such as ANA and AONE. The mission of the CPRI is to initiate and coordinate urgently needed activities to facilitate and promote the routine use of CPRs throughout health care. CPRs have the potential for improving health care access, quality, cost, and satisfaction. The CPR is an electronic patient record that resides in a system designed to support users through availability of complete and accurate data, practitioner reminders and alerts, clinical decision support systems, links to bodies of medical knowledge, and other aids (Workgroup on CPR Description, 1995). The CPR System (CPRS) is
the set of components that form the mechanism by which patient records are created, used, stored, and retrieved. It includes people, data, rules and procedures, processing and storage devices, and communication and support facilities. The CPRS has six requirements for the system to support the vision of the IOM and the CPRI. First, it must have access to lifetime data about patients. Next, the user must have access to medical, nursing, and health care knowledge bases. There must be value-added tools for caregivers, such as graphical representation of data or feedback on individual practice patterns. Fourth, the system should support clinical decision making. There should be flexible connectivity between hardware and software. Finally, the CPRS should support secondary users: researchers, educators, administrators, and payers.

Content and Format- Building Blocks for the CPRS

The building blocks of the CPRS are its infrastructure and infrastructure. Infrastructure is defined by Andrew and Dick (1995) as "computer hardware, application software, operating systems, programming languages, graphical user interfaces, networks, communications protocols, and related technology issues" (p. 80). There are many components to be considered in the content and format of the CPRS. Databases and database management include management of different kinds of data such as text, graphics, images, numerical data, sound, and full motion video. How are workstations to be designed and how many are needed on a care unit? Data acquisition and data retrieval are key considerations. IOM believes that all clinicians should input their own data and that data coming from other electronic mechanisms should be automatically integrated into the CPRS. The acquisition and retrieval of data, however, are dependent on standards. Text processing, such as histories and physicals or reports from consults or old patient data, needs to be accommodated. Images need to be processed and stored. Standards for data exchange and vocabulary need to be developed and used. System communications and network
infrastructure should be compatible. System reliability and security must be maintained. Linkages to secondary databases are desired. All of these building blocks of the CPRS are ensured through the development and use of standards. Without standards, none of these building blocks would fit together. All would be chaos and we would have recreated the worst parts of the paper-based patient record in a new format. We would lose the opportunity to be able to conduct data mining of the CPR and the CPRS to obtain information and knowledge about patients, health care quality, and the functioning of integrated health care systems. The major categories of health care information standards are shown in Table 2.

What Standards Are Important?

The standards being addressed by ANSI-HISPP, CPRI, and the International Standards Organization (ISO) are the standards that are most important. These organizations promote, coordinate, and harmonize standard activities worldwide. What should your standards strategy be? First, become educated on the status of healthcare information standards. Next, utilize available standards. Finally, support the development of emerging standards.

Vocabulary Standards

Problems with consistent vocabulary usage in the medical record were commented on by a noted physician, William Farr, in 1839. According to Dr. C. Chute, an international expert in the history of medical languages and classifications, Farr observed that a standard, reliable nomenclature was as important to medical inquiry as weights and measures to the physical sciences. He called for the problem to be addressed without delay (Personal communication, Christopher Chute, July 1995). The standardization of vocabulary plays a strategic role; it is a
Yet, as William Farr reminds us, vocabulary or nomenclature standards continue to be very important, yet difficult and illusive.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Major Categories of Health Care Information Standards</th>
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<tr>
<td>Health care Identifier Standards</td>
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</table>
  Patient Identifiers  
  Provider Identifiers  
  Site-of-Care Identifiers  
  Product and Supply Labeling Identifiers |
| Health care Communications Standards |  
  Payor/Provider Communications: DISA, ASCX12N  
  Clinical Laboratory Results: ASTM Committee E1238  
  Radiological Image Communication: ACR-NEMA, DICOM  
  Medical Knowledge Communication: ASTM Committee E1460, Arden Syntax  
  Provider Systems Communications: HL7  
  Framework Model: IEEE, PI157, MEDIX  
  Pharmaceutical Communications: NCPDP |
| Content and Structure Standards |  
  ASTM Committees E31.12, 19 and 22  
  Confidentiality, Data Security and Authentication  
  Legislative activities  
  ASTM Committees E31.12, 17 and 20  
  Institute of Medicine study  
  CPRI White Papers |
| Quality Indicators, Data Sets and Guidelines |  
  ICAHO’s Indicator Measurement System  
  Health Plan Employer Data and Information Set (HEDIS)  
  Practice Guidelines  
  Professional Organizations  
  AHCPR and PHS Practice Guidelines  
  Proprietary Guidelines |
| Clinical Data Representations |  
  Major Coding Schemes  
  ICD-9-CM, CPT-IV, SNOMED International,  
  Laboratory Observation Identifier Names and Codes (LOINC),  
  DSM-IV, DRGs, National Drug Code (NDC) |
| Related Projects |  
  Unified Medical Language System (National Library Of Medicine)  
  CPRI evaluations of clinical coding systems |
"Infrastructure refers to data dictionaries, various coding structures, vocabularies, treatment protocols and guidelines, various medical/health care metaphors, and the individual health care practitioner's perspective—the various things a health care practitioner needs in order to use the system to provide cost-effective, quality, and timely patient care" (Andrew & Dick, 1995, p. 80). Vocabulary is the interface to knowledge resources, such as practice guidelines, critical paths, and provider reminders, decision support, and reference material. Vocabulary supports practice analysis through quality improvement, clinical epidemiology, and outcomes analysis. Vocabulary labels the concepts used in these efforts and supports their operational definitions. Without vocabulary standards, the user of the CPR would never know what the data mean, as everyone would have their own interpretation.

The effort to standardize nursing vocabularies is relatively recent, covering only 25 years of activity. In order to support the evolution of nursing vocabulary standards, ANA has recognized four nomenclatures: the North American Nursing Diagnosis Association (NANDA) Taxonomy, the Omaha VNA system, the Georgetown Home Health Care system, and the Nursing Intervention Classification (NIC). There are other evolving nursing vocabulary standards: Nursing Outcomes Classification (NOC) by Marion Johnson and Meridean Maas, the University Hospital Consortium project by Judith Ozbolt, the Nursing Lexicon by Susan Grobe, and the International Classification of Nursing Process (ICNP) by the International Council of Nursing. Other nomenclatures of interest to nursing are the National Library of Medicine's Metathesaurus and Unified Medical Language System (UMLS), SNOMED International (Systematized Nomenclature of Human and Veterinary Medicine by the College of American Pathologists), International Classification of Diseases, 9th edition with clinical modifications with the Common Procedural Terminology, 4th edition (ICD-9-CM and CPT-IV), the Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatry Association (DSM IV), and the READ Codes from Great Britain.

As these vocabularies and nomenclatures are developed many used the same terms but with slightly different meanings. This property of language makes it difficult for health care providers,
especially from different disciplines, to communicate accurately. An example will clarify this problem. Classify the term "fire." Does one classify the actual word or the concept represented by the word? How would you classify "fire a gun", "fire a clay pot", "fire an employee" and "fire in a hearth?" Different disciplines use fire differently, yet all use the same word. Harmonization or translation approaches need to be developed.

Changes in the Paradigm

The paradigm of a medical record is beginning to change with the advent of the new paradigm of a computer-based patient record. To understand this change, the concept of paradigm must be understood. A paradigm is a world view; a way of seeing and thinking about reality and society which drives one's actions. It is a traditional pattern of thinking, a personal way of knowing that helps us to see, explain and act in the world in which we live (Peat, 1993). Barker (1992) defined a paradigm as a set of rules and regulations that establish boundaries and tell us what to do to be successful within those boundaries. Paradigms act like invisible filters; one sees things only as they fit within the boundaries. Shifting between paradigms can be uncomfortable, like the moments between two trapezes. The classic Walt Disney and Company story about Dumbo is the story of a paradigm shift. No one was ready for an elephant to fly, even Dumbo needed a feather to assist him to move between paradigms.

Some of the shifts created by the new paradigm of the CPR are just as difficult to comprehend. Medical information codes with crude clinical specificity primarily used for reimbursement (ICD-9-CM, CPT IV) are shifting to health information codes (SNOMED International, UMLS) which have greater clinical specificity that lead to improved clinical productivity, quality, and research. Creation of individual databases for clinical trials and research shift to availability of larger, less costly research databases derived from longitudinal health records. Access to the medical record by one user at one location shifts to access to the CPR by multiple users at multiple locations. Review of clinical documents one at a time shifts to review of clinical information integrated from several sources and media. Review of medical records one episode at a time shifts to review of patient problems and clinical information across encounters
and episodes. Retrospective reviews of medical record information shift to concurrent and interactive usage of clinical information, protocols, and decision support.

Integrated Health Delivery Systems

Integrated health delivery systems depend on two conditions. First, the patient services are organized and coordinated to provide a seamless delivery of care across the continuum of sites. Second, care providers must function in multidisciplinary teams. Covey (1990) said that "once we become relatively independent, our challenge is to become effectively interdependent with others" (p.60). It is critical that care providers understand and are able to articulate their own disciplines before they can be effective members of a health care team. This is essential in order to coordinate an integrated health care delivery system.

Overall Plan of Care

Several definitions are needed to understand the integration of services at the patient level, as opposed to a systems level of health care integration. The plan of patient care is an important organizer of patient data within a seamless health care delivery system. The overall plan of care (OPC) is a process that utilizes a multidisciplinary approach, integrating patient needs with services and resources to ensure optimal outcomes (UNMC, 1994). There are three components of the OPC. First, patient needs must be addressed and documented: assessments/physical findings, orders, laboratory/diagnostic results, procedures, and education. Second, services and resources used to meet the patient needs must be captured (the NMMDS is part of this component). Finally, the measurement and monitoring of patient outcomes with their linkages to the care process must be captured.

Though a plan of care has been specified, the next task is to link the care process with a specific patient problem in order to facilitate clinical decision making. The concept of an episode of care provides this linkage. An episode of care is defined as a series of one or more encounters during which a particular patient problem is addressed. An episode of care has no specific time constraints but is defined by the care process. A patient may have multiple, concurrent episodes
of care. A problem is defined as an established diagnosis, an unexplained abnormal finding, a procedure or, a demographic/social history item that poses risk to the patient or may change treatment management.

Current financial models calculate the cost of care based on encounters (office visits, hospitalizations). With the CPR using the episode of care, or an aggregate of encounters around the care of a specific problem, are these models still feasible? With managed care focusing on prevention and management of specific problems and populations of patients, wouldn't the episode of care as a basis for the calculation of actual cost be more reflective of the current reality? The changing paradigm of health care will affect all areas. Even the assumptions and models used to calculate the use of resources must be scrutinized.

A next major question concerning the OPC is how are the organizational services and resources to be captured or coded in the CPR and CPRS? When nursing alone is considered, what data elements will be needed to reveal the contributions and relationships of the domains of nursing care? Another example will be useful to illustrate the relevant questions to be asked about defining nursing data elements. Wesorick (1995) defined three domains of nursing care that parallel most systems used to determine patient care staffing needs for nurses. Her conceptualization is also useful since most redesign efforts involve task analysis and not common clinical decision making made during the conduct of those tasks. Are there different data elements for these three domains of nursing care?

Nursing Domain and Staffing Patterns

Delegated Nursing Domain. The delegated domain of nursing is the provision of nursing services which require a physician's order and are needed by the patient. These services require professional nursing judgment and decision making. Most of these services are medical tasks of the type that are used to determine nurse staffing needs. Nurses in acute care settings spend the majority of their time performing these tasks.

Interdependent nursing domain. This domain is the nursing care related to assessing, monitoring, detecting, and preventing potential complications and problems associated with a
particular medical diagnosis or treatment plan. They are not ordered by the physician, nor are they task driven. This surveillance work is accounted for, in part, by most staffing systems. However, it is closely tied (boundaries are blurred) to the practice of medicine.

Independent nursing domain. This is the domain of nursing where service is provided because the patient has a certain human response or nursing diagnosis. Few staffing algorithms, with the exception of patient education, consider the activities in this domain. The most common reason nurses give to explain their frustrations is that they "do not have time to nurse" (Wesorick, 1995). What does this complaint mean? What resources would help nurses practice in the paradigm of professional nursing and not in the craft paradigm of accomplishing tasks? Do nurse executives need to reconceptualize the "work of nurses" so that it fits the paradigm of professional nursing? Florence Nightingale (1859) is credited with asking what is nursing's needful thing; if we have high principles without understanding our essence or foundation, there is little worth to paying attention to details. She was directing us to construct a structure or foundation within the health care culture to support the beliefs of nursing. Without this understanding and ability to communicate the contributions of the independent domain of nursing there will be no clarity or consensus, even within nursing, much less within a multidisciplinary team, on nursing. She is concerned, and the concern is still valid today, that nursing is not clear enough or strong enough to establish this foundation. Nursing is still overshadowed by medicine. Covey's (1990) remarks about teams become even more important, "once we become relatively independent, our challenge is to become effectively interdependent with others" (p.60). Do nurses know what is uniquely nursing so that they can become effective members of a multidisciplinary team without the patient losing the important contribution of nursing care? The foundation and structure, required by Nightingale, is also required in partnering relationships.
A Challenge to the Conference Participants

What are the data elements of the Nursing Management Minimum Data Set? How are the data elements defined? How are the data elements determined? These questions need to be answered by the conference participants. The challenge is to open your minds and be receptive to a new paradigm. Do not look to the past for what was possible, but create the data elements that will define the needs and requirements of nursing. Fox (1941) cautioned us that the mind creates the cause and our experiences the effect generated by the cause. If you do change your mind, you will continue to produce the same effects or experiences of which you are anxious to eliminate. Let us take this opportunity to create the NMMDS that will help nurse executives understand the linkages between nursing resources and patient outcomes.

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NMMDS Concepts:
A Dialogue about Scope, Inclusiveness, and Minimum

Judith A. Ryan, PhD, RN, FAAN
Associate Director, University of Iowa Hospitals and Clinics
for
Nursing and Patient Care Services

Invited Paper
Nursing Management Minimum Data Set Invitational Working Conference
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NMMDS Concepts:
A Dialogue about Scope, Inclusiveness and Minimum

In the opening session of this conference, Dr. Judith Warren described the work of the Codes and Structure Work Group of the Institute of Medicine's Computerized Patient Record Institute. She also gave us an excellent overview of the emerging 'system' of individuals and organizations working to develop the data bases that will undergird the delivery of health services in this country. In that process, Judy engaged us in a beginning dialogue about the relationships between health care quality, electronic patient records, and integrated delivery systems.

Dr. Maas and I have been charged to engage you in further reflection about other concepts relevant to definition and measurement of the nursing management minimum data set: the concepts of Scope, Inclusiveness, and Minimum. Like Dr. Warren, we have been charged to draw on data from our respective experience to make explicit how we have reached our conclusions - and to be open to thoughtful and forceful inquiry about those conclusions. We look forward to this ongoing and important dialogue.

SCOPE. The American Heritage Dictionary (1992) defines scope to be "the area covered by a given activity" (p.1618). My experience in nursing and health care administration over these past seven years confirms that services will be delivered through integrated delivery networks. I believe this to be true, not because providers are building them, but because the consumer of health services is no longer willing to bear either the cost or inconvenience of health care services that the patient and family have to integrate.

The concepts "integrated delivery network" and "managed competition" are also quite different in my mind. While I believe services will be delivered through some sort of integrated delivery network, I do not believe the structure of many separate provider networks competing for the purchasers dollar will provide a sufficient structure for the delivery of health services in this country. I believe "managed competition" will eventually evolve into a single payer system,
whether that system be voluntary or governmental, that will cover basic benefits delivered in a variety of sites and levels of care. It will be the flow of information about that patient's experience with a series of units of health service that will describe the virtual "network" of health care by which he or she is served. And it will be the unique patient number or "identifier" that will integrate the delivery of services across these various sites and levels of care.

Those conclusions drive me to assert two major decision principles for the NMMDS:

1. NMMDS elements must have common operational definitions and be comparable across all sites, levels and episodes of care provided within the emerging, integrating delivery network for health services in this country.

2. There must be one common patient identifier among all health data sets.

INCLUSIVENESS. The American Heritage Dictionary (1992) describes the concept of inclusiveness as "taking everything into account including everything: comprehensive" (p. 913). This definition leads me to assert several strategic essentials - to make several assumptions- to draw several conclusions about the inclusiveness of the Nursing Management Minimum Data Set:

1. Data describing nursing management must be integral to the total set of data describing nursing diagnoses, interventions and outcomes, as well as the demographic, patient identification, and primary provider data encompassed in the Nursing Minimum Data Set.

2. The total NMMDS must be encompassed within the data set describing health care executive information generally.

3. The minimum set of nursing management data will be encompassed in the set of data describing essential contextual variables surrounding the Computerized Patient Record.

4. Elements of the NMMDS will be included in the Community Health Information System data base.

Therefore, the Nursing Management Minimum Data Set should draw from existing relational data bases, and add ONLY those new elements that add value to decision making for nursing management that are not included in these other related minimum data sets.
Given that conclusion, I would like to pose a process for our thinking together. First, I propose that we “bound” the NMMDS by deciding whether a given element is one that nursing can influence and control, and therefore should include within the data set describing its purview of management. Subsequent to that decision, I propose we consider whether the data element is already encompassed, defined, and available to nursing in a related, relational data base. Finally, I propose we conceptualize and operationally define new data elements.

**MINIMUM.** The *American Heritage Dictionary* (1992) defines the concept of minimum to be "the least possible quantity or degree ... the lowest limit of variation... a value of a function that is exceeded for any sufficiently small increase or decrease in the functions variables" (p. 1150).

It therefore seems to me that we not only have the obligation to include the fewest possible data elements in the nursing management data set, but to reduce those data elements to the essence, or core, or indivisible or most prime data elements that need to be in that data set.

Over Christmas holiday, I read Bill Gates' *The Road Ahead* (1995), in which he envisions that the emerging technologies of the digital age will eventually make all the information in the world available to everyone, transforming the way human beings make choices about everything. I came away struck by two thoughts. First, I felt overwhelmed by the challenge that we have to codify and build the data base to undergird such a vast highway of information.

Second, I was amazed at the power that the concept of “minimum” or “prime” will have in that building process. In Gates' vision, prime numbers (the infinite number of numbers that cannot be divided evenly by any number except 1 and themselves) will provide the system that will assure almost fool proof confidentiality of data within this massive information highway. The sender (or sender’s computer) will simply identify his message by a number that is the multiple of two large prime numbers, and inform the receiver, through another means, of one prime factor. In fact, all data used by digital technology is itself a product of the minimal data set "0" and "1", the alphabet and the set of ordinal numbers.
In other words, essential or prime or minimal data components have such power that they can be used to construct other data. In fact, very few data elements can serve as the building blocks of all the information in the world. If the concept “minimum” has such profound power, we have the very heavy task of identifying, defining, and measuring that minimum set of data elements so essential, so core, so central, so "prime" to the concept of nursing management that they can be used to construct the foundation for comparable data bases across all sites, levels and episodes of care in the emerging integrated national health care delivery system. In Gates' vision, we are the group charged with building the foundation for the information highway that will eventually "make all of the information about nursing management of the environment in which patient care is delivered available to every nurse manager in the world!"

To provide us with some framework within which to think about this gargantuan task, I have drawn on work by Dr. Tom Nolan (1996). I believe that the role of management is to improve or enhance organizational performance. In his new book, Nolan provides a systems view of improving organizational performance.

Commonly used definitions for system performance include capacity, utilization, productivity and efficiency. Nolan defines and relates these concepts in the following way:
CAPACITY = **RESOURCES X YIELD**

**CYCLE TIME**

*CAPACITY* of the system means the potential of the system to produce given certain resources, yields, and cycle times.

*RESOURCES* are the human, technological, financial resources and space/facilities available to support the system of nursing and patient care.

*YIELD* is the percentage of time the system of nursing and patient/client care services produces the intended outcome.

*CYCLE TIME* is the elapsed time between the point at which outputs are ready for processing and the time an outcome is produced. Cycle time includes both production time and wait time.

\[
\text{Utilization} = \frac{\text{resources used}}{\text{resources available}} \\
\text{Efficiency} = \frac{\text{standard units of output produced}}{\text{resources used}}
\]

\[
\text{Productivity} = \text{Efficiency} \times \text{Utilization} = \frac{\text{standard units of output produced}}{\text{resources available}}
\]

*UTILIZATION* refers to how much of the theoretical capacity was actually used during a given time period.

*EFFICIENCY* describes the relationship between inputs and outputs.

*PRODUCTIVITY* is the ratio of output to input for a given time period (Input can consist of labor, material, capital, and/or support services)

When these terms are used to describe the performance of a process, output is usually measured in standard units produced. When labor is the most important resource, standard hours are used. That is, standards are established for the various types of outputs.

I would propose that we use Nolan's framework to guide our decision-making about which data elements should be included in the MINIMUM set of data describing nursing management. In other words, if we believe that the role of nursing management is to improve the performance of those processes and systems for which we are accountable, I would propose we include only those data elements describing some aspect of capacity (core resources, yield or cycle time), efficiency, utilization, or productivity.
References


Minimum Data for Nursing Management Accountability and Effectiveness

Meridean Maas, PhD, RN, FAAN
Professor, College of Nursing, The University of Iowa

Invited Paper
Nursing Management Minimum Data Set Invitational Working Conference
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Minimum Data for Nursing Management Accountability and Effectiveness

The purpose of this working conference is to reaffirm conceptual definitions and measures of the minimum data elements for a Nursing Management Minimum Data Set (NMMDS) (Huber, Delaney, Crossley, Mehmert, & Ellerbe, 1992) across the life span and healthcare delivery settings in a managed care environment. Nurse managers need these data, in addition to the Nursing Minimum Data Set (NMDS) developed by Werley and others (Werley, Lang, & Westlake, 1986), to assess and control the effectiveness of nursing practice. The need for standardized nursing data in computerized databases has been recognized for a long time and there has been much progress in developing standardized nursing languages for the Nursing Minimum Data Set elements (Iowa Intervention Project (NIC), 1996; Maas, Johnson, & Moorhead, In press; Martin & Scheet, 1992; North American Nursing Diagnosis Association (NANDA), 1994; Ozboldt, 1991; Saba, O’Hare, Zuckerman, Boondasji, Levine, & Oatway, 1991). There has been less attention given to the development of a Nursing Management Minimum Data Set. Yet, the need for standardized nursing management data has never been greater and will undoubtedly be even more important in the future. This need is emphasized in the recent Institute of Medicine (IOM) (1996) report, "Nursing Staff in Hospitals and Nursing Homes: Is It Adequate?" that calls for cooperative federal and private organization actions to "...develop data bases containing information that will shed light on workforce issues and on the relationships of staffing, care processes, and patient outcomes" (p.106).

My focus is on implications of the NMMDS for long term care (LTC) and for integrated health care delivery systems. What I mean by “LTC” is all community-based care given over an extended period of time, not limited to nursing homes but inclusive of home care, respite care, residential, and assisted living. Integrated systems include more than one level of care in more than one setting that have formal linkages among levels of care and settings and may or may not be formally linked to an acute care hospital.
Why the NMMDS is needed

There are several reasons why standardized nursing management data are needed in long term care. The most critical reason is for inclusion in large, local, national, and international computerized databases. Ongoing work among the Agency for Health Care Policy and Research, the Library of Medicine, and many other professional and voluntary groups and associations to develop a Computer-based Patient Record (CPR) certainly underscores the need for standardized data. Standardized nursing data are required for nurses’ use of the CPR. The NMMDS defines corollary data that will enable evaluation of the effectiveness of nursing management interventions, including structural and process strategies for the delivery of nursing care.

The construction and management of large data sets are important current developments in health care. In LTC there are a number of large data sets generated by regulators and payers and more will evolve, including those developed by integrated health care systems and networks and by entrepreneurs. The single, stand alone long term care setting will likely soon be a thing of the past. Yet much of the data are not standardized across data sets and most nursing data elements are yet to be included. Certainly, much data needed by nursing management are not included in these databases, and if included, are not standardized across the continuum of care settings. Therefore, many questions of interest to nursing and vital for the evaluation of the effectiveness of health care organizations cannot be addressed. The omission of standardized nursing data constrains nursing’s ability to be an accountable participant in the delivery of quality health care.

It is not possible to determine the nursing circumstances that lead to quality patient outcomes or to determine their costs without including the contextual variables that nurses manage or must consider as contingencies in the analysis of effectiveness. Currently, nursing is held hostage by constant change and more powerful actors in the highly dynamic and uncertain health care environment. Without standardized nursing management data, nurse managers will continue to implement change or succumb to it without the benefit of cost effectiveness evaluation. Further, opportunities for nursing to proactively influence the development of systems that guarantee quality health care for all are lost. Data are power for those who have it.
Standardized data are even more powerful because they are, as Bowker and Star note in a paper on knowledge and infrastructure in international information management, “standardized data are distributed widely over time and space”, transformed into information and knowledge, and fundamental to coordinating widely distributed activity (Bowker & Leigh Star, 1993, p. 3-4). The implications of this potential power for nursing are apparent in systems that are becoming more integrated, complex, and competitive.

The implications for nursing in long term care also are clear. Because much of long term care is nursing and more health care will be provided in long term care settings, it is critical to be able to evaluate the effectiveness of nursing management and clinical interventions in an environment of cost containment and reduction. It also will be increasingly important to evaluate effectiveness across the continuum of long term care services and settings since the economic incentives will be to provide care in the least costly setting. These data are necessary to cost effectively handle increased acuity levels at all levels of care under conditions of competition.

We are all aware that as hospitals downsize and reduce the length of stay for convalescence following acute illnesses or exacerbations of chronic illnesses, the demand for care continues to shift to ambulatory and long term care settings. At the same time, greater numbers of elderly with chronic conditions are requiring health care services. Concurrently, there is some recognition of the cost advantages of keeping people well. Therefore, personnel and other resource needs are shifting to community-based long term care and wellness programs. While there is a lag in the shift of these resources to long term care services, containment and reduction of costs continue to be emphasized.

Competition among long term care and community-based providers is increasing as third party payers seek the best service at the least cost. Integrated health care systems are evolving among acute and long term care settings to provide a range of services that better position organizations to competitively negotiate managed care contracts. Some form of case management is now a hallmark of most organized service systems for people with chronic illnesses or disabilities. Case management programs are developing in a variety of long term care
settings, including home and community care programs, residential care programs, and subacute care settings in an effort to provide quality care at minimal cost. Public-private partnerships of various sorts are under consideration, as well as ways to appropriately involve family members and volunteers in care provision to achieve quality without additional cost.

Clinical pathways have been developed to provide better coordination of primary care, hospital care, rehabilitation, nursing home, and home health care in an attempt to assure that quality outcomes are met while costs are reduced. The emphasis on minimized cost is expected to continue as more care is delivered with capitated funding, making the need to document effectiveness more critical.

Because the pressures and incentives to control costs of care like those used in acute care are moving rapidly into LTC, managed care efforts have to affect the utilization and character of long-term care services. The effect of managed care on the provision of healthcare services to the elderly has become more pronounced as both Medicaid and Medicare programs turned to capitated managed care models of serving their enrollees more cost effectively.

According to current reports (Spragins, 1995), the percentage of Medicaid enrollees in managed care increased from 9.5% in 1991 to 23.2% in 1994. Medicare HMOs are increasing. In 1991, there were only 96 HMOs, covering 1.6 million people. In 1994, there were 165 with 2.6 million members, and 70 others awaiting government approval. Medicare HMOs are the fastest growing sector of the managed care market and were expected to serve 3.5 million elderly by the end of this past year. This trend is expected to continue and to accelerate. Currently, it is estimated that 60-80% of elders in California are enrolled in HMOs. Predictions are that within a few years the Medicare program as we know it will be replaced by managed care systems nationwide. These changes are expected to be driven by the federal government’s inability to contain Medicare and Medicaid expenditures in the current cost-based reimbursement system. Yet LTC service delivery, largely nursing, in general is not positioned to act most effectively in this rapidly emerging environment.
To provide care in the least restrictive and most cost-effective setting possible, managed care providers look to the lowest level of care that can adequately meet the needs of a patient. Managed care organizations entering contractual relationships with LTC providers are first and foremost concerned with locating the provider that can serve patients with specific needs in the fewest number of days for the lowest all-inclusive daily rate. This model of service delivery translates directly into higher acuity levels at lower levels of care. As enrollment in managed care organizations increases, healthcare payers will be less concerned with where services are provided than with the cost of the services. The choice of service delivery location will not be dictated by the consumer's preference, but by cost-effectiveness as determined by the managed care payer.

In LTC, we will likely see managed care providers refusing to authorize what they see as unnecessary and costly transfers of patients to higher levels of care. It will be more important to know the costs of nursing, especially in competitive pricing.

A different view of quality is emerging, namely the view required by managed care organizations. Quality of care is supplanted by adequacy of care. LTC settings that have emphasized maximizing quality will undoubtedly find this new view of quality disturbing and difficult to accept. Nevertheless, they will be forced to scrutinize the quality of care that can be delivered at a competitive price. Logical, philosophical justifications for higher costs of care, such as a better quality of life, will be much more difficult to sell. Nurse managers will need data to show the costs of specific treatments and the contexts that result in a measured life quality. In quantifiable terms, cost and outcome effects of specific clinical and management interventions need to be evaluated and demonstrated that are equal to or superior to those of competitors. To do this, there are minimum data describing context and resources for care delivery that must be standardized and available across settings to allow the analyses that are needed within settings and to compare costs and performance with competitors.

It is nursing's ethical obligation to ensure that quality nursing care is provided in the managed care environment at minimal cost. Issues of quality will need to be brought before the public and policymakers. It is not a matter of justifying higher reimbursement from managed care
providers; it is a matter of doing what is right for the people nurses serve. It is a matter of defining quality. With quality defined, nurse managers can help their organizations assist patient purchasers.

Because managed care organizations look for the most cost-effective health care delivery that is adequate for the patient’s needs, the pressure to cut costs may encourage a disproportionate enrollment of persons with fewer or less serious health problems under some contracts, disadvantaging those with greater need for care. Nursing needs to be equipped to provide the data that justifies the costs of quality care for all persons in the appropriate setting. The number of RN providers in LTC has been a concern for the delivery of quality care for some time. We may see this erode further. Yet nursing has generated essentially no data comparing the cost effectiveness of alternative professional to nonprofessional staff ratios. Without these data, care delivered or managed by professional nurses could disappear entirely from much of LTC because of competition.

Staff turnover is a nursing management contingency that most agree negatively impacts the cost and quality of long term care. Yet, nurse managers in long term care do not have the data available to assess the extent of the problem or its effects on cost and quality. The effects of turnover cannot be assessed across settings, comparing different strategies and circumstances that may improve or exacerbate turnover rates. We know little about how different staff mixes and ratios of staff to patients, training programs, and delivery of care models, affect job satisfaction, absenteeism, or work injuries, and in turn their influence on costs and outcomes effectiveness. Further, we perhaps know even less about how these variables operate within organizations of different types, size, structures, or levels of care to impact cost and effectiveness.

Finally, cost and effectiveness competition will likely be further complicated by the cohort or generation of elders who are entering LTC in the 1990s. These elders' attitudes and lifestyles have shifted and are expected to continue to shift as older patients are replaced by the new generation. Lifestyle preferences will reflect better health and more active interests. Many will likely demand finer and larger accommodations and more amenities. They will want greater
self-determination and participation in management decisions. They will be more organized for education, networking, and lobbying purposes. They will be more culturally diverse, better educated, more high-tech, more geographically mobile, and more analytical about value. LTC managers and nurse managers will be further challenged by these shifts in characteristics and attitudes to develop environments and programs that are cost-effective and market competitive. With the needed data for evaluation, the natural resistance of managers and caregivers to these changes may disadvantages LTC settings in the competitive environment.

There are other examples that illustrate the need for NMMDS data for the evaluation of the effectiveness of nursing management interventions and the management contingencies that influence the cost and quality of nursing care. Many circumstances that illustrate the need could be described. Nurse managers simply do not have the data needed to make the decisions that will best position LTC settings to compete in a managed care environment or to responsibly influence health policy at all levels. Without these data nursing will not contribute accountably in the necessary interdisciplinary efforts to provide cost effective LTC.

In thinking about the NMMDS in regard to use across the long term care continuum, there are some rather clear issues. Most are likely not unique to LTC, but some are related to the need to capture comparable data across the continuum of care settings. Many of the issues have been identified for the work groups by the conference convenors.

One identified issue is how can all variables be measured consistently across all settings? What descriptor of nursing unit is meaningful across settings? What unit of service or workload unit is meaningful across settings? What is the meaning of unit size in all settings? It appears that some data are required that characterize a nursing unit and other data are aggregated from individual staff or patient data and would already exist in administrative databases. Do we identify all data elements in a minimum set needed by nursing management or only those that are most likely not included in other administrative and clinical data sets? In LTC settings the existence of these data and the ways data are measured and collected are undoubtedly not uniform. A related issue is what is minimum for nursing management data? The current NMMDS
contains 18 variables and many have a number of subvariables. Finally, what impact does the managed care environment have on the NMMDS data needed in LTC? For example, the current NMMDS contains Medicare case mix, but Medicaid case mix is not applicable to LTC. What additional data are needed, if any? The current NMMDS elements are mostly unit level data. All but one of the elements identified at the institution level can actually be aggregated from unit level data. Perhaps two of the questions we need to consider are: 1) what unit level data can be aggregated for organization (institution) and network level data that are needed and therefore don't need to be identified at these higher levels? and 2) are there characteristics of the external environments of the unit, organization, and network that need to be identified and are data needed by nursing managers? For example, organization complexity may be an important piece of information for analyzing and comparing data across settings. Network centralization may be important for comparing nursing department data across settings. And characteristics of the market may be important for comparing nursing data for all levels.

As I said at the outset, we really don't need to be convinced of the need for the work set forth for this conference. After all, this is the center for nursing classification. We have comprehensive standardized languages with NANDA, NIC, and NOC developed to be used in all settings that will be useful in integrated systems and for incorporation in the electronic health record. As Joanne McCloskey (personal communication, 1996) likes to say, "In nursing we can describe What Works because we have NIC and NOC. 'What' is NIC. 'Works' is NOC. With NANDA, NIC, & NOC we can study What Works for Whom. 'NANDA' is the Whom. But to study "What Works for Whom under what Conditions", we need the NMMDS. What works for whom under ideal conditions is efficacy research. What works for whom under real conditions is effectiveness research. Clearly, we need the NMMDS for both.
References


PART IV: CLINICAL TESTING

Achieving widespread implementation of the NMMDS is crucial for the profession and useful for health care delivery at large. Pilot data collection is encouraged for all service settings. Managers and administrators are encouraged to use the survey instrument that follows. It is readily recognized that some of the elements presently cannot be collected. However, this instrument can be used to influence the development of financial and personnel information systems within each delivery site, setting, and network.
ENVIRONMENT

Type of Nursing Delivery Unit/Service:

Unique name: ____________________________
Identification number ____________________
Identify the percentage of each category that most accurately describes the service/type of patient/client care delivered by the nursing delivery unit/service; total should equal 100%.

[ ] Ambulatory/surgery/procedural area
[ ] Assisted living care
[ ] Community/outreach
[ ] Community/public health
[ ] Day care
[ ] Emergency service
[ ] Free-standing nurse-managed clinic/center/service
[ ] Free-standing outpatient clinic
[ ] Health promotion/well care/fitness service
[ ] Home care
[ ] Hospice care
[ ] Hospital acute inpatient
[ ] Hospital based skilled care
[ ] Hospital critical care inpatient
[ ] Hospital nursing center
[ ] Hospital outpatient clinic
[ ] Hospital sub-acute inpatient
[ ] Laboratory/screening/diagnostic
[ ] Nursing home intermediate care
[ ] Nursing home skilled care
[ ] Nursing home special care unit
[ ] Nursing home sub-acute inpt.
[ ] Occupational health service
[ ] Operating room
[ ] Primary care clinic
[ ] Rehabilitation center
[ ] Residential care
[ ] Respite care
[ ] Retirement living
[ ] School health service
[ ] Sports medicine service
[ ] Volunteer
[ ] Other; specify: ____________________________
Patient/Client Population

Identify the percentage of each category that best describes the patient/client population served by the nursing delivery unit/service; the total in each category should equal 100%.

**Specialty:**
- AIDS/HIV
- Birthing
- Cardiology
- Communicable disease
- Critical care, cardiac
- Critical care, medical
- Critical care, medical/psychiatric
- Critical care, medical/surgical
- Critical care, neonatal
- Critical care, pediatric
- Critical care, surgical
- Dental
- Diabetes
- Dialysis
- Emergency/trauma
- Healthy
- Hematology
- Immunization
- Maternal-child
- Maternity
- Medical
- Medical/psychiatric
- Medical/surgical
- Neurology
- Nutrition
- Oncology
- Pain
- Psychiatry/psychology
- Pulmonary
- Rehabilitation
- Rheumatology
- Sexually transmitted diseases
- Substance abuse
- Surgical
- Transplant
- Violence/injury
- Other; specify:
  ![Total percentage](<image>)

**Developmental Focus:**
- Adult
- Child/adolescent
- Elderly
- End life
- Fetal
- Mixed (all ages)
- Neonate
  ![Total percentage](<image>)
Interaction Focus:

- Family
- Group
- Individual
- Population, international
- Population, local
- Population, national

Total percentage

Volume of Nursing Delivery Unit/Service:
For each nursing delivery unit/service, identify the type of encounter(s) that are used on this unit/service, the number of hours of care designated for each type of encounter, the average number of encounters delivered per 24 hours, and the maximum number of units of service available during a 24-hour period.

<table>
<thead>
<tr>
<th>Type of Encounter</th>
<th># of Hours of Care Designated per Encounter</th>
<th>Average # of Encounters per 24 Hours</th>
<th>Maximum # of Encounters Available During 24-Hour Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Days</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Patient Visits</td>
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<tr>
<td>Patient Procedures</td>
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<tr>
<td>Patient Consults</td>
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<tr>
<td>Patient Contacts</td>
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<tr>
<td>Patient Programs</td>
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<tr>
<td>Patient Classes</td>
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<tr>
<td>Other; specify:</td>
<td></td>
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</tr>
</tbody>
</table>

Nursing Delivery Unit/Service Accreditation:

- Yes; check all that apply:
  - JCAHO
  - CHAPS
  - Medicare
  - Medicaid
  - State
  - VA
  - Other; specify: ____________________________

- Not available
- Available, but not sought
- Sought, not granted
Centralization:

List each position beginning with the nursing delivery unit/service manager and including the chief nurse executive/administrator in the left column. For each position, rate the extent of organizational decision making power in the four areas identified.

1=never; 2=seldom; 3=sometimes; 4=often; 5=always

<table>
<thead>
<tr>
<th>Line Position</th>
<th>ORGANIZATIONAL DECISION MAKING POWER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Participation in Decisions to Hire New Staff</td>
</tr>
<tr>
<td>Manager</td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td></td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td></td>
<td>1-2-3-4-5</td>
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<tr>
<td></td>
<td>1-2-3-4-5</td>
</tr>
<tr>
<td></td>
<td>1-2-3-4-5</td>
</tr>
</tbody>
</table>

Complexity:

For each of the following, rate the perceived amount (1=low, 2=minimal, 3=moderate, 4=large, 5=high) of turnover, heterogeneity, and distractions/demands within the unit.

<table>
<thead>
<tr>
<th></th>
<th>Low 1-2-3-4-5</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient/client Turnover</td>
<td>Low 1-2-3-4-5</td>
<td>High</td>
</tr>
<tr>
<td>Heterogeneity of patient/client mix</td>
<td>Low 1-2-3-4-5</td>
<td>High</td>
</tr>
<tr>
<td>Distractions/demands</td>
<td>Low 1-2-3-4-5</td>
<td>High</td>
</tr>
</tbody>
</table>

Rate each of the following, rate the perceived amount of homogeneity/heterogeneity, stability/shifting, and density/sparseness of competitors, suppliers, customers, and regulators originating from outside the nursing delivery unit/service.

<table>
<thead>
<tr>
<th>Competitors, Suppliers, Customers, and Regulators</th>
<th>Homogenous 1-2-3-4-5</th>
<th>Heterogeneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitors, Suppliers, Customers, and Regulators</td>
<td>Stable (Dynamic) 1-2-3-4-5</td>
<td>Shifting</td>
</tr>
<tr>
<td>Competitors, Suppliers, Customers, and Regulators</td>
<td>Dense 1-2-3-4-5</td>
<td>Sparse</td>
</tr>
</tbody>
</table>
Patient/Client Accessibility:

Select one of the following to most accurately describe the patient/client accessibility from your nursing delivery unit/service.

- None: Telecommunications/telehealthcare
- Minimal: Self-contained unit/service, little walking
- Moderate: Poorly designed self-contained unit/service, clinic, same facility, same neighborhood
- Large: Geographic assignment/normal caseload 30-60 minutes travel time, responsibility in more than one facility
- Extensive: Frontier/rural caseload; one hour or more travel time
- Other; specify: ____________________________

Method of Care Delivery:

Select the one method that most accurately describes care delivery of the nursing delivery unit/service:

- Private Duty: RN employed by the patient/client and accountable for planning, coordinating, delivering, and evaluating nursing care to the patient/client.
- Functional: RN employed by organization and accountable for specific tasks and technical aspects of care to a group of patients/clients.
- Team: RN employed by organization and accountable for planning, coordinating, and evaluating nursing care for a group of patients/clients and for directing a team of professional and non-professional providers and assistants
- Total: RN employed by organization and accountable for planning, coordinating, delivering, and evaluating the nursing care for one or more patients/clients for a work shift.
- Primary: RN employed by organization and accountable for planning, coordinating, delivering, and evaluating nursing care over a 24-hour period with or without assistive staff.
- Case Management: RN employed by client or organization and accountable for planning, coordinating, monitoring, and evaluating the health care provided by an interdisciplinary team across the continuum of health care over a 24-hour period with or without assistive staff.
- Other; specify: ____________________________

Complexity of Clinical Decision Making

Estimate the percentage of low, medium, and high patients/clients in your nursing delivery unit/service that would be classified in each of the following.

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Standardization of</td>
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<tr>
<td>Procedure</td>
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<td>100%</td>
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<tr>
<td>Variability/exceptions</td>
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<td>100%</td>
</tr>
<tr>
<td>Professional</td>
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<tr>
<td>Judgment/experience</td>
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<td>/intuition</td>
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<td>100%</td>
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<tr>
<td>Knowledge</td>
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<td>100%</td>
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</tbody>
</table>
NURSE RESOURCES

Management Demographic Profile:

Title; specify: __________________________
Credentials: __________________________
Educational background: __________________________
Years of experience as a manager: __________________________
Years of experience in nursing: __________________________
Nursing Staff and Patient/Client Care Support Personnel

Please complete for your nursing delivery unit/service.

<table>
<thead>
<tr>
<th>Job Classification</th>
<th>Persons supervised</th>
<th>Budgeted staff</th>
<th>Average daily number of productive* FTEs*</th>
<th>Number budgeted positions filled</th>
<th>Average turnover (% of staff leaving a position)</th>
<th>Average vacancy (% of staff positions unfilled)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td># FTEs*</td>
<td># FTEs*</td>
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<tr>
<td>Advanced Registered Nurses</td>
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<tr>
<td>CNS (master’s prepared)</td>
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<tr>
<td>RNs Reporting to Nursing</td>
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<tr>
<td>RNs Not Reporting to Nursing</td>
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<tr>
<td>LPN/LVNs Reporting to Nursing</td>
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<tr>
<td>LPN/LVNs Not Reporting to Nursing</td>
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<tr>
<td>Nurse Aides or Equivalent Extenders</td>
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<td>Nursing Students</td>
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<tr>
<td>Agency Staff</td>
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<tr>
<td>Case Manager</td>
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<tr>
<td>Other, specify:</td>
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<tr>
<td>Nursing Management</td>
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<tr>
<td>Staff Development/ Education</td>
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<tr>
<td>Research Personnel</td>
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<tr>
<td>Nursing Quality Improvement Staff</td>
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<tr>
<td>Support Staff (unit clerks, environmental aides/techs, other); specify:</td>
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</tbody>
</table>

* Productive = all persons available for care/service provision, excluding e.g.: vacation, disability, or any other type of paid time off
* FTE = 2080 hours per year
### Nursing Care Staff Demographic Profile:

<table>
<thead>
<tr>
<th></th>
<th>% of nursing staff in each category by highest degree</th>
<th>Average years of service of nursing staff</th>
<th>Average years of service at institution</th>
<th>Average years of service in present position</th>
<th>Average years of prof. service of nursing staff by category</th>
<th>Certified; specify type:</th>
<th>Advanced practice nurses; specify type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD Dip Bac Mast Doc</td>
<td># FTE</td>
<td># FTE</td>
<td># FTE</td>
<td># FTE</td>
<td># FTE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS (master's prepared)</td>
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</tr>
<tr>
<td>RN</td>
<td></td>
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<tr>
<td>LPN/LVN</td>
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<tr>
<td>Non-Professional</td>
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</tbody>
</table>

### Satisfaction:

This item will be separately completed for each of the following job classes: advanced practice nurse, master's prepared CNS, RNs reporting to nursing, LPNs reporting to nursing, nurse aides or equivalent extenders, case managers, support staff including unit clerks and environmental aides/techs.

**Job Class:** Advanced Practice Nurse

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally speaking, I am very satisfied with this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>I frequently think of quitting this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>I am generally satisfied with the kind of work I do in this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Most people on this job are very satisfied with the job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>People on this job often think of quitting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Scale: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.
### Master's Prepared CNS

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally speaking, I am very satisfied with this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>I frequently think of quitting this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>I am generally satisfied with the kind of work I do in this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Most people on this job are very satisfied with the job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>People on this job often think of quitting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Scale: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

### RNs Reporting to Nursing

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally speaking, I am very satisfied with this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>I frequently think of quitting this job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>I am generally satisfied with the kind of work I do in this job.</td>
<td></td>
<td></td>
<td></td>
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<td>100%</td>
</tr>
<tr>
<td>Most people on this job are very satisfied with the job.</td>
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<td></td>
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<td>100%</td>
</tr>
<tr>
<td>People on this job often think of quitting.</td>
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<td>100%</td>
</tr>
</tbody>
</table>

Scale: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.
### LPN/LVNs Reporting to Nursing

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
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</table>

Scale: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

### Nurse Aides or Equivalent Extenders

<table>
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<tr>
<th>Item</th>
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### Job Class: Case Managers

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<thead>
<tr>
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Scale: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

### Job Class: Support Staff Including Unit Clerks and Environmental Aides/Techs

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<tr>
<th>Item</th>
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Job Class: (specify)

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Scale: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.
## FINANCIAL RESOURCES

### Payer Type:

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<th>Percentage of Units of Service</th>
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<tr>
<td>Non Government</td>
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<tr>
<td>HMO</td>
<td></td>
</tr>
<tr>
<td>PPO</td>
<td></td>
</tr>
<tr>
<td>Other; specify:</td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
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<tr>
<td>Other; specify:</td>
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### Reimbursement:

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<th>Percentage of Gross Revenues</th>
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<tr>
<td>Discounted fee for service</td>
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<tr>
<td>Per diem</td>
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</tr>
<tr>
<td>DRG</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Per visit</td>
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<td>Per capitation</td>
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### Nursing Delivery Unit/Service Budget:

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<th>Planned Budget</th>
<th>Actual</th>
<th>Net Revenue</th>
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<tbody>
<tr>
<td>Wage, Salary, Benefits</td>
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<td></td>
</tr>
<tr>
<td>Other: Operating Expenses, Depreciation</td>
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<td></td>
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</table>

### Expense:

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<th>Dollars</th>
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</thead>
<tbody>
<tr>
<td>Direct: Sum of labor costs directly attributable to a unit of service</td>
<td></td>
</tr>
<tr>
<td>including wages, benefits, travel, recruitment, education per year.</td>
<td></td>
</tr>
<tr>
<td>Direct Material: Sum of material costs includes client/patient care</td>
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</tr>
<tr>
<td>supplies used to provide the unit of service per year.</td>
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</tr>
<tr>
<td>Indirect: Capital, an expense depreciated over time; depreciation,</td>
<td></td>
</tr>
<tr>
<td>as defined by standard accounting practices; administration, labor</td>
<td></td>
</tr>
<tr>
<td>expenses shared by more than one nursing unit; clinical program</td>
<td></td>
</tr>
<tr>
<td>development, expenses for future development per year.</td>
<td></td>
</tr>
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Person Completing Survey ___________________________ (Name) ___________________________ (Position) ___________________________ (Date)

I have reviewed this survey and believe the data to be accurate.

_________________________ (Name) ___________________________ (Position) ___________________________ (Date)
The NURSING MANAGEMENT MINIMUM DATA SET
INTEREST FORM

For further information on the NMMDS or to participate in piloting this survey, please complete
and mail/fax the following information.

Agency
Agency address
Contact person
Phone #          (W)          (H)
Fax #
Email address

Check one or more of the following:

_____ We definitely plan to be a test site.

_____ We need more information about:

_____ the variables.

_____ being a test site.

_____ Other, please specify:

Return this form to:
NMMDS Team
468 NB
The University of Iowa
50 Newton Road
Iowa City, Iowa 52242
Phone: 319.335.7122 / 319.335.7113
Fax: 319.354.0113 / 319.335.7119
Email: diane-huber@uiowa.edu or connie-delaney@uiowa.edu
APPENDICES

Appendix A: Brochure
Appendix B: Letter of Participation
    Confirmation and List of Participants
Appendix C: Preconference Documents
Appendix D: Data and Issues
Appendix E: Guidelines for Reflections and Inquiry
APPENDIX A

Brochure
Data Set for Nurse Executives Project
Nursing Management Minimum Data Set
Invitational Working Conference

January 18-20, 1996
Iowa City, Iowa

Location
January 18, 1996 - Holiday Inn, Iowa City, Iowa
January 19 and 20, 1995 - Nursing Building, The University of Iowa

Diane Huber, PhD, RN and Connie Delaney, PhD, RN
CO-Principal Investigators

Co-sponsored by
The University of Iowa College of Nursing-Office of Continuing Education
and American Organization of Nurse Executives
The University of Iowa College of Nursing
Continuing Nursing Education

Data Set for Nurse Executives Project
Nursing Management Minimum Data Set Invitational Working Conference

Purpose, Objectives, and Procedures

Purpose
The purpose of the Nursing Management Minimum Data Set Invitational Working Conference is to reaffirm the conceptual definitions and measurement of the NMMDS variables across life span and health care delivery settings within a managed care environment.

Objectives
At the conclusion of the working conference participants will have identified a nursing care management minimum data set that:
1. meets the criterion of minimal;
2. is relevant within a managed care environment;
3. represents the scope health care delivery across the life span within all delivery settings; and
4. addresses the inclusiveness of a health promotion, prevention, and wellness, as well as illness, framework.

SCHEDULE

Thursday, January 18, 1996
12:00-7:00 pm Arrival, check-in, dinner (on own)
7:00 p.m. Health Care Quality, Computer-based Patient Records (CPR), and Integrated Delivery Systems - Judith Warren, PhD, RN
8:30 p.m. Reception

Friday, January 20, 1996
8:00 Shuttle leaves from Holiday Inn
8:30 Welcome - College of Nursing - NB 133
8:45 Nursing and Patient Care Services: Data Needs in a Managed Care Environment
    Meridean Maas, PhD, RN, FAAN
9:15 Judith Ryan, PhD, RN, FAAN
9:45 Break
10:00 Work Overview
    Schedule
    Framework
    Information Packet Review
    Review of Proposed Variables
11:00 Session I Working Groups: Variable Review
    Group 1 - NB 133
    Group 2 - NB 131
    Group 3 - NB 137

Friday, January 20, 1996 (cont.)
12:00 Lunch
1:00 (Continued)
3:00 Review of Working Groups
   Group 1 - NB 133
4:00 Group 2 - NB 131
4:45 Group 3 - NB 137
5:00 Large Group Summary - NB 133
5:30 Adjourn
6:00 Dinner - Iowa Memorial Union - State Room

Saturday, January 20, 1996
7:45 Shuttle leaves from Holiday Inn
8:00 Session II Working Groups: Variable Measures
   Group 1 - NB 133
   Group 2 - NB 131
   Group 3 - NB 137
10:00 Review of Measures
    Group 1 - NB 133
10:45 Group 2 - NB 131
11:30 Group 3 - NB 137
12:15 Summary - NB 133
   Follow-up Work
   Working Lunch
1:00 Adjourn
   (Airport shuttle/Holiday Inn shuttle)
Appendix B

Letter of Participation Confirmation and List of Participants
December 18, 1995

Dear [Name]:

We are pleased that the Nursing Management Minimum Data Set (NMMDS) Invitational Working Conference will be taking place January 18-20, 1996, and that you have agreed to participate. In collaboration with the American Organization of Nurse Executives (AONE), the Conference will advance the research efforts to identify, validate, and implement the NMMDS.

Enclosed are detailed materials for reading and preparation for the Conference. Please be sure to bring the packet with you when you come on January 18th. Also enclosed is a form that we ask you to fill out and return in the enclosed self-addressed, stamped envelope. Your prompt response will greatly assist us with final preparations for the Conference. Should your plans change at any time, please contact either one of us.

Thank you for making this project a priority in your busy life. We look forward to an exciting and productive working conference.

Best regards,

Diane Huber, PhD, RN, Co-PI
Associate Professor, College of Nursing
Nursing Building, Room 486
University of Iowa
Iowa City, Iowa 52242
(o) 319-335-7122
(h) 319-354-7010
fax: 319-354-0113
diane-huber@uiowa.edu

Connie Delaney, PhD, RN, Co-PI
Associate Professor, College of Nursing
Nursing Building, Room 464
University of Iowa
Iowa City, Iowa 52242
(o) 319-335-7113
(h) 319-338-0720
fax: 319-335-9990
connie-delaney@uiowa.edu
NMMDS Working Conference Participant List

Diane Huber, PhD, RN
Associate Professor, College of Nursing
Nursing Building, Room 486
University of Iowa
Iowa City, Iowa 52242

Connie Delaney, PhD, RN
Associate Professor, College of Nursing
Nursing Building, Room 464
University of Iowa
Iowa City, Iowa 52242

Peg Mehmert, MSN, RN, C
Director of Nursing Practice/Systems Integration
Genesis Medical Center
1227 E. Rusholme Street
Davenport, Iowa 52803

Janet Specht, PhD, RN
Nursing Building, Room 313
University of Iowa
Iowa City, Iowa 52242

Phyllis Schultz, PhD, RN, FAAN
Associate Professor
21329 Oak Way
Brier, Washington 98036

Heidi Nobiling, MA, MBA, RN
1067 Boyd Tower
The University of Iowa Hospitals & Clinics
200 Hawkins Drive
Iowa City, Iowa 52242-1009

Sally Bachman, RN, MBA, CNAA
Assistant Administrator, Nursing
Winnebego County Memorial Hospital
901 Montgomery
Decorah, Iowa 52101

Marilyn K. Bedell, MSN, RN, OCN
Nursing Director
Mary Hitchcock Memorial Hospital, One West
One Medical Center Drive
Lebanon, New Hampshire 03784-0001

Donna Fosbinder, DNSc, RN
Associate Professor
Coordinator, Graduate Program in Nursing Administration
Brigham Young University
422 SWKT
Provo, Utah 84602

Karen Bossard, MPH, RN
Administrator
Greene County Medical Center
1000 West Lincolnway
Jefferson, Iowa 50129

International Advisory Board

Marjorie Beyers, RN, PhD, FAAN
Executive Director, AONE
840 Lakeshore Drive
Chicago, Illinois 60611

Leah Curtin, Dsc, RN, FAAN
Editor-in-Chief, Nursing Management
672 Neub Road
Cincinnati, Ohio 45233

JoEllen Koerner, PhD, RN, FAAN
Vice President, Patient Services
Sioux Valley Hospital
1100 South Euclid Avenue
PO Box 5039
Sioux Fall, South Dakota 57117

Norma Lang, PhD, RN, FAAN
Dean, School of Nursing
University of Pennsylvania
Nursing Education Building
420 Guardian Drive
Philadelphia, Pennsylvania 19104

Judith Ryan, PhD, RN, FAAN
Associate Hospital Director UIHC for Nursing and Patient Care Services and Associate Dean for Clinical Practice UI College of Nursing
T-100 GH UIICH
Iowa City, Iowa 52242
Franklin Shaffer, EdD, RN  
Executive Director, Educational Resources  
Springhouse Corporation  
11 Bethlehem Pike  
Springhouse, PA 19477

Roy Simpson, RN, C, FNAP, FAAN  
Corporate Executive Director Nursing Affairs  
HBO & Company  
301 Perimeter Center North  
Atlanta, GA 30346

Joyce Verran, PhD, RN, FAAN  
Professor, College of Nursing  
The University of Arizona  
Tucson, Arizona 85721

Consultants

Kitty Buckwalter, PhD, RN, FAAN  
Professor, College of Nursing  
The University of Iowa  
Nursing Building, Room 444  
Iowa City, Iowa 52242

Gloria Bulechek, PhD, RN, FAAN  
Associate Professor, College of Nursing  
The University of Iowa  
Nursing Building, Room 468  
Iowa City, Iowa 52242

Geraldene Felton, EdD, RN, FAAN  
Professor and Dean, College of Nursing  
The University of Iowa  
Nursing Building, room 101  
Iowa City, Iowa 52242

Marion Johnson, PhD, RN  
Associate Professor, College of Nursing  
The University of Iowa  
Nursing Building, Room 488  
Iowa City, Iowa 52242

Kathleen Kelly, PhD, RN  
Assistant Professor, Director of Continuing Nursing Education, College of Nursing  
The University of Iowa  
Nursing Building, Room 406  
Iowa City, Iowa 52242

Meridean Maas, PhD, RN, FAAN  
Professor, College of Nursing  
The University of Iowa  
Nursing Building, Room 452  
Iowa City, Iowa 52242

Joanne McCloskey, PhD, RN, FAAN  
Distinguished Professor, College of Nursing  
The University of Iowa  
Nursing Building, Room 494  
Iowa City, Iowa 52242

Toni Tripp-Reimer, PhD, RN, FAAN  
Professor, College of Nursing  
The University of Iowa  
Nursing Building, Room 468  
Iowa City, Iowa 52242

Statistician

Frank Kohout, PhD-statistics  
Professor, College of Dentistry  
The University of Iowa  
Dental Science Building, S-450  
Iowa City, Iowa 52242

Invited Keynote

Judith Warren, PhD, RN  
Associate Professor/Clinical Nurse Researcher  
Office of Nursing Research, College of Nursing  
600 South 42nd Street  
Omaha, Nebraska 68198

Observer

Pat Moritz, PhD, RN  
Chief of Nursing Systems Research  
Division of Extramural Programs  
National Institute for Nursing Research  
Building 45, Room 3AN-12  
45 Center Drive, MSC 6300  
Bethesda, Maryland 20892

Recorders

Barb Head, MSN, RN  
Doctoral Student, College of Nursing  
The University of Iowa  
Nursing Building, Room 468  
Iowa City, Iowa 52242
Cindy Scherb, MS, RN
Doctoral Student, College of Nursing
The University of Iowa
Nursing Building, Room 468
Iowa City, Iowa  52242

Joseph Greiner, BSN, RN
Master’s Student, College of Nursing
The University of Iowa
Iowa City, Iowa  52242
Appendix C

Preconference Documents
October 20, 1995

Dear

Welcome to the Nursing Management Minimum Data Set (NMMDS) research team. Your expertise and knowledge are important to this project and we look forward to your participation. In order for you to begin the work of the team, we have compiled a packet of material that will give you background to the project and forms that we are asking you to complete that are necessary for grant applications.

Articles:

(This article represents work completed through the second round Delphi. The third round Delphi has been completed since the writing of this article.)


Work in Process:

As you will note from the enclosed, the national Delphi has been completed for acute care managers and executives. Further, pilot studies for both long term care and ambulatory care have been completed and support the NMMDS elements identified from the national Delphi. The community/home health and occupational health settings pilots are underway. Efforts to secure federal funding and further collaboration with AONE are priorities.

Other information needed:
NMMDS Team Bio (form enclosed)
Biographical Sketch: (form enclosed)
If we have a copy of your biographical sketch, it is enclosed. Please update.
Otherwise please review Diane’s example and complete an enclosed form.
Other Support: (form enclosed)
A copy of Diane Huber’s other support form is included for you to use as a guide.
Curriculum Vitae: Please submit a copy of your current vitae.
We appreciate your response as soon as possible to the request for the completion of the forms for grant submissions.

Thank you, again, for joining our team. We will be in contact soon. Please feel free to call if you have any questions regarding any of this information. If you need to fax, the number is 319-335-9990.

Sincerely,

Diane Huber, PhD, RN  
Co-Principal Investigator  
319-335-7122

e-mail / Internet address:  
diane-huber@uiowa.edu

Connie Delaney, PhD, RN  
Co-Principal Investigator  
319-335-7113

e-mail / Internet address:  
connie-delaney@uiowa.edu
Appendix D

Data and Issues
Data

The following charts summarize the means for the ratings of necessity, clarity, and collectibility of the NMMDS variables by:

1. **Acute**: National Delphi of AONE members (N=1199)

2. **LTC expert**: Long Term Care Experts included the Gerontology Research Interest Persons at The University of Iowa (N=42).

3. **LTC conf**: Long Term Care Annual Conference at The University of Iowa (N=200).

4. **LTC survey**: Members of the American Geriatrics Society (N=134).

5. **Ambul**: Random sample of 100 members of the Ambulatory Care Administrators and Managers (N=1249).

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<th>Framework</th>
<th>Variable</th>
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Issues

Environment

What demographic data should be collected at institutional/agency level, e.g. ownership, managed care affiliations?
Should accreditation be "external evaluation"?
Should outcome of evaluation be "result of last review"?
What is workload unit/episode of care?
How is size measured? by use?
How is average intensity of care measured in prevention, health promotion, health maintenance?
Is unit level the operational unit/cost or revenue center, product line?
How does occupational health define size? How are programs and clinics addressed? Employers served?
Do "referrals" measure size?
Should OSHA, prevention, holistic view be reflected?

Personnel

Are data on competency adequately addressed in the NMMDS? Should scientific, technological, and communication competency be included?
Should satisfaction be included in the MINIMUM data set?
Should nurse satisfaction with MDs be addressed?
Do categories of health care providers included just nursing and non-licensed personnel?
Should other health professionals involved in patient care services be included, e.g. respiratory, physical therapists.

Resources

How should workload unit be defined to encompass all settings and managed care environment?
Should Medicare mix be "payer mix"?
How clear is productive/non-productive?
Where should readmissions be addressed?
Appendix E
Guidelines for Reflection and Inquiry
Guidelines for reflection:
1. State the generalization explicitly.
2. State the data which led to the generalization.
3. Ask: Am I willing to consider that this generalization may be inaccurate or misleading?

Guidelines for inquiry:
1. Make your own reasoning and the data on which it is based explicit.
2. Encourage others to explore your view.
3. Encourage others to provide different views.
4. Actively inquire into others views.