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Exploring Nurse Case Managers' Language Describing Health Needs and Interventions with Populations

Kathleen I. Gremel
University of Rhode Island, kgremel1@gmail.com

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EXPLORING NURSE CASE MANAGERS' LANGUAGE DESCRIBING HEALTH
NEEDS AND INTERVENTIONS WITH POPULATIONS

BY

KATHLEEN I GREMEL

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OF
KATHLEEN I GREMEL

APPROVED:

Dissertation Committee:

Patricia M Burbank

Joan M Peckham

Donna Schwartz Barcott

Ginette Ferszt

Robin Devin

Nasser H. Zawai
Dean of the Graduate School

UNIVERSITY OF RHODE ISLAND
2013

ABSTRACT

Major advances in health information technologies, safety and quality initiatives, and health policy changes have fueled the development and implementation of the Electronic Health Record (EHR). Any discipline's work and contribution to patient care exist in the EHR only as they are coded. Thus, coding nursing's knowledge, work and contribution to patient care in meaningful ways requires nurses to have a language that defines nursing concepts and works consistently and reliably. Currently the American Nurses Association (ANA) recognizes twelve (12) nursing languages being used in the EHR. Over the last forty years many research efforts have validated these nursing languages and mapped the languages to each other and to other clinical terminologies. Although these nursing languages exist and are in use, they were developed and are used primarily for describing nursing care to individual clients and occasionally extended to families and groups. Nursing languages describing the care of populations has not been well researched. Thus, the purpose of this study was to identify the descriptors and names nurse case managers used to refer to subpopulations, the data elements they used to assess subpopulations, the descriptors and names did nurse case managers use to refer to interventions for the subpopulation, and the descriptors and names used to refer to outcomes of the interventions.

The study was designed to investigate language used by nurses doing population based care. Participants were nurse case managers who were members of the Case Management Society of New England. A questionnaire was distributed in both online and written formats; 19 participants answered questions based on a case study about subscribers of an insurance company with diabetes mellitus. A tentative folk

taxonomy was generated from responses to the questionnaire. Although the tentative folk taxonomy requires further investigation, it identified ten categories labeled utilization, cost, disease-related, treatment-related, people factors, living factors, education, support/coach/care coordination, and type of interactions. Thirty-nine subcategories were associated with the five categories and gave more specificity to the language in the categories. Further investigation of the folk taxonomy with different samples is needed to validate the categories and subcategories followed by additional research with different diseases and conditions.

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To my family for their love and patience

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To my committee for their willingness to participate

And to all my clients, the source of much learning and inspiration

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CHAPTER ONE

INTRODUCTION

Major advances in health information technologies, President Bush's Executive Order of 2004, and national initiatives around safety and quality have fueled the development and implementation of the electronic health record (EHR). Any discipline's work and contribution to patient care exist in the EHR only as they are coded in the EHR. Thus coding nursing's knowledge, work and contribution to patient care in meaningful ways requires nursing to have a language that defines nursing concepts and work consistently and reliably. Currently the American Nurses Association (ANA) has twelve (12) recognized nursing languages being used in EHRs. Over the last forty years many research efforts have validated these nursing languages and mapped the languages to each other and other clinical terminologies. Although these nursing languages exist and are in use, they were developed and are used primarily for nursing care to individual clients and sometimes for families. Not as well researched are nursing languages for the care of populations.

Population based nursing care is a part of the practice for public health nurses, home care nurses, and other nurses working in community settings. Equally important, the current changes in the United States health care system have renewed the interest in care coordination and community based services. A key component of this care coordination with current health care reforms is managing groups and populations of people thus population based nursing care is increasingly important. The need for

accurate definitions and labels for population based nursing is crucial so nurses' work is included the EHR and that the EHR was useful to the nurses.

Background

Defining nursing practice started long before the introduction of the EHR with the development of the terminologies, classifications, and taxonomies of nursing practice referred to as nursing languages. Nursing languages that describe nursing diagnoses, interventions, and outcomes have been developed and refined leading to twelve (12) different American Nurses Association (ANA) recognized nursing languages, many of which have also been used in EHR software programs. The nursing languages are classifications and taxonomies of nursing diagnoses, interventions, and outcomes that define, label and organize nursing work by concepts or phenomena.

Development of Nursing Languages

The advent of direct reimbursement for nursing services with the 1965 passage of Medicare and Medicaid created the need for billing codes for nursing services which in turn generated interest in codifying the work of nurses. The 1970's gave birth to nursing languages. In 1973 a group of nurses, later known as North American Nursing Diagnosis Association, convened to establish a list of diagnoses to be used by nurses. An expert panel of nurses identified an initial set of 37 nursing diagnoses. The initial list was developed not from a particular data set but the expertise of nurses in the new field of nursing informatics. The diagnoses were created using the perspective of human responses i.e. naming client problems from client's response to diseases (Gebbie, 1976). The name of the language they developed was referred to as NANDA;

later in 2002, it was changed to NANDA-I to reflect the international contributions to the language (Herdman, 2012).

In 1975 Visiting Nurse Services of Omaha Nebraska received grants to standardize data elements and forms for collecting home care data as way to move from paper-based to computer-based record systems focused on the care of clients. This became the Omaha System (Martin, 2005).

By the 1980's the Nursing Intervention Classification was developed by researchers at the University of Iowa to describe nursing interventions (McCloskey and Bulecheck, 2000). Later Bulecheck, Butcher and Dochterman (2008) created a list of client outcomes resulting from nursing interventions. In 1991 the Home Health Care Classification, later renamed Clinical Care Classification, was developed based on study of national sample of home health care patient records by Saba (1991). The Saba study was driven by a Medicare initiative to improve reimbursement for home care services. Also in the 1990's an international group of nurses assembled which led to the creation of the International Classification of Nursing Project (ICNP). The goal of the ICNP was to develop a compositional terminology for nursing practice that facilitated the development of and the cross mapping among local terms and existing terminologies. The goal was not to develop new language per se but a methodology to manage the different languages. There were other languages that were developed for the purpose of creating a dictionary of terms and software development. Examples of these languages are Nursing Management Minimum Data Set (NMMDS), Nursing Minimum Data Set (NMDS), and Logical Observations, Identifiers Names and Codes (LOINC®) and SNOMED CT® a common language for consistency in health care.

Other languages were the Perioperative Nursing Dataset (PNDS) designed specific for operative patients and Alternative Billing Codes (ABD) which described alternative interventions that other codes do not address and that were needed for billing. Of all the twelve nursing languages only NIC, NOC, NANDA-I, Omaha System, CCC, and PNDS are concept terminologies representing nursing in terms of concepts. Although there is a significant body of research supporting these nursing languages, they were predominantly developed for the purpose of the hospital-based nursing practice. The result is terminology that is primarily individual client-centered with limited inclusion of terminology for population focus care. It should be noted, however, that two of the languages, the Omaha System and CCC, were developed from the perspective of a home care nursing practice. Although these languages include terminology reflecting the family and community, they have an individual client-centered concentration. It still remains that nurses working with groups or populations are clearly under-represented in the research and nursing language development, especially among community-based nurses.

Case Management

One area of nursing practice that requires a focus on groups and populations is nurse case management. With the emergence of managed care in the 1980's, nursing case management became one of the important agents in the healthcare industry particularly essential to insurance companies and third party payers. Other changes and initiatives in the healthcare industry also moved the practice of nursing case management forward so it has evolved into defined, separate programs established in institutional settings, community settings, and in third party payer settings. Case

management was not a new practice area for nurses. The forerunners of these programs come from the public health programs from the early 1900's; however, despite its roots in the past, this is still a relatively new area of nursing practice or at least an area with a renewed interest.

Documentation Systems

Nursing case management includes a) case finding, b) assessment and problem identification, c) development, implementation and coordination of a plan and d) evaluation of the case management plan. All of this requires documentation for recording their work, communications, and monitoring progress of established plans. Again the need for accurate nursing language is important. The question is whether the current nursing languages are adequate or not.

During interviews with case managers as part of this researcher's course work, nurses reported keeping separate notes from their formal documentation systems because there was not a place for the information in the documentation system. The result of the keeping notes separate from the formal documentation system was that every nurse case manager developed their own terminology and their own method of record keeping creating a separate informal documentation systems.

Inclusion of the informal documentation into the formal EHR is essential not only for recording the work of the nurse case manager but also necessary for documenting nurses' contribution to healthcare and improving the practice of nursing. Research is necessary and critical to add to the knowledge and evidence for the practice of nursing case management. It also contributes to understanding and documentation of nursing practice and outcomes by measuring outcomes, understanding, identification, and

clarification of the nursing language, i.e. the labels used in the deliberative and enactment phases of nursing action (Kim, 2010).

Significance of the Nursing Language

Nursing languages have importance for many purposes such as documentation; communication; coding for EHR; and a source of data for administrators, regulators and researchers. It can also serve to further the understanding of the practice domain (Kim, 2010).

Practice Domain

First consider the practice domain. The intention of nursing languages to define and label one or a cluster of phenomena related to nurses or recipients of nursing care squarely places nursing language in the practice domain (Kim, 2010). The practice domain is one of the four conceptual domains in Kim's organizational constructs for the study and understanding of the many phenomena that are part of nursing knowledge. The domains of client, client-nurse, practice and environment provide a structure to organize the content of the nursing knowledge. As expected the client domain is concerned with phenomena pertaining to the client. The focus of the client-nurse domain is with the encounters and relationship between the client and nurse. Environment represents the context and the external world that surrounds the client and nurse. Lastly, the practice domain is about what nurses do in nursing work. The phenomena related to the practice domain are about the nurse's formulating and thinking about nursing actions in addition to the carrying out of the nursing actions. In other words the domain is concerned with the how the nurse thinks, makes decisions, and what actions are adopted or used.

The core of the practice domain is the deliberation and enactment process i.e. the thinking of the nurse and actions taken are connected to each other and to the results or outcomes, which then inform the thinking. This is not a linear process but a continual back and forth between deliberating and enacting. Because these processes take place within a context of time and place, one could visualize the processes as corkscrew motion moving through time and place. It is also important to recognize that these processes are intertwined with the clinical situation or context, aspects of and the personal knowledge of the nurse, the goals and means of the nurse, and aspects of the client.

Nursing case management as mentioned earlier is a newly reinvented area of nursing practice and ranges from clients who are individuals to a client defined as a population or subpopulation. In either case the nurse case manager still goes through the process of deliberation and enacting. The information used in the deliberation may be different and the actions taken as part of the enacting process also vary with client. All the complexity of the processes as described in Kim's practice domain exists within the practice of nursing case management.

Current nursing languages give labels and definitions for the complexity of the deliberation and enacting processes. The practice domain directs attention to the complex, dynamic interaction involving the client, nurse, and clinical situation. At the same time it provides a framework to examine nursing practice from a more holistic focus for such practice issues such as clinical decision-making or care planning and a particularistic focus such as nursing diagnoses or nursing languages. Therefore the

practice domain can provide a supporting structure for nursing languages and nursing languages can help inform the practice domain.

Documentation & Communication

Nursing languages are clearly necessary elements for documentation and communication but in today's healthcare environment they are pivotal. The healthcare industry is placing increasing importance on coordinating individual health services among the many providers to improve quality and reduce costs. Similarly they are striving for better coordinated service packages and programs for populations and subpopulations. Consequently documentation and communications are not just necessary but have become crucial. When considering the role of nurse case managers in the coordination processes at all levels, the documentation and communication for and by nurse case managers needs to be clear, succinct, and computer ready.

The need for coordination by the healthcare industry is not merely driven by the need for efficiency, effectiveness, and cost; but additionally driven by three major political and regulatory forces. First was the Institute of Medicine (IOM) report, the second was the 2004 Executive Order by President Bush requiring implementation of electronic health records and subsequently meaningful use initiatives, and the third was passage of the Patient Protection and Affordable Care Act of 2010.

IOM Report

The IOM report *To err is human: building a safer health care system* in 1999 uncovered safety and quality defects in the healthcare system. The second report *Crossing the quality chasm: a new health care system for the 21st century* called for urgent change. Since these reports, the healthcare industry and healthcare

professionals have moved to understanding the impacts of work on safety and quality. Much of the work is captured through the documentation in the EHR.

Executive Order

In 2004 President Bush (Executive Order No 13,335, 2004) issued the executive order requiring all providers receiving federal payments for healthcare services to be using an electronic health record (EHR). President Bush's executive order mandated that all medical records be electronic by 2014 for federal health programs including federal employee health benefit plans, Medicare, Indian Health Service, TRICARE (health plan for Department of Defense), and any services through Veteran's Administration. This generated a massive expansion of health information technology into literally all levels and type of institutions, companies, and providers. Additionally, the healthcare industry incorporated the use of health information technology as it responded to quality and safety issues raised in reports such as from the Institute of Medicine.

The executive order also propelled major efforts supported through other federal regulations and incentives to make EHR systems meaningful and useful to the many different practitioners. Although the different practitioners share many of the data elements coded in the EHR, each discipline uses their discipline-specific language and coding to document their work. Therefore for the nurse case manager, nursing language that adequately describes their actions must exist to ensure that their work can be coded into the EHR and also ensure the EHR contains the data elements necessary for their work as it relates to groups and populations.

Patient Protection and Affordable Care Act

The third driver for improved coordination is the Patient Protection and Affordable Care Act (2010). The act specifies the use of navigators to assist, coordinate, and steer patients through the healthcare system. Although this is new and still in development, healthcare providers are already preparing for, exploring options, and establishing positions to respond to the new navigator role. The other dominating change was tying payment to quality and patient outcomes. Although Medicare and private insurance companies have begun using these types of payment methodologies, the Affordable Care Act codifies these newer methodologies. For example, a hospital will not be paid if the patient was discharged from the hospital but readmitted within 30 days. The home care company who may have provided services to the patient who was discharged from the hospital is paid on a prospective method based on the clinical and functional needs of the patient. For both the hospital and the home care company to break even, not lose money or even make a surplus, the hospital and home care company must negotiate and coordinate services so that patients can be successful and remain in their home. The patients win because they were appropriately and safely transferred between settings; the hospital and home care company win because they are paid; and the Medicare program wins because it eliminates a costly hospitalization, thus saving money.

Electronic Health Record

Although EHR has been discussed previously it bears mentioning again because it links many aspects of the healthcare industry. Major advances in health information technologies, federal mandates, payment systems, and safety and quality initiatives

have fueled the development and implementation of the EHR. The EHR is a fundamental tool for coordination of services and communication among the various stakeholders in healthcare industry. Nurse case managers are one of the many providers who use the EHR for documenting their services and communicating with other team members. Thus it is imperative that the coding necessary for the EHR captures the spectrum of work performed by nurse case managers.

Capturing the work by nurse case managers is also important because the EHR is a repository of data, which is indispensable to administrators, managers, and researchers. Healthcare administrators need data for business decisions such as developing new programs and product lines, costing of products, budgeting, etc. Program and service managers need data for program planning and evaluation, budgeting, etc. Insurers and governmental administrators need data for the decisions related to planning, implementing, and evaluating benefit packages. Providers need data to assess and analyze their practices. Nurse case managers need data to assess, plan, and intervene for the groups and populations under their care. Clearly data from EHR is needed. In 2009 the American Recovery and Reinvestment Act (ARRA) and the Health Information Technology for Economic and Clinical Health Act (HITECH Act) established meaningful use, created the Office of National Coordinator of Health Information Technology (ONC), and provided for Medicare and Medicaid incentive payments for meaningful use. Soon afterwards the HIT Policy and Standards committees proposed meaningful use objectives and measures.

Purpose of the Study and Research Questions

The purpose of this study was to explore the natural language used by nurse case managers specifically about their work with a population of people with diabetes mellitus i.e. what words nurse case managers do use to describe assessment, interventions, and outcomes for a population Ultimately, the goal is to identify and map population-centered language across diagnoses used by nurse case managers to appropriate ANA approved nursing languages. This is the necessary first step towards that goal. To that end, the specific research questions that will be addressed are:

1. What descriptors and names do nurse case managers use to refer to subpopulations?
2. What are the data elements used by nurse case managers to assess subpopulations?
3. What descriptors and names do nurse case managers use to refer to interventions for the subpopulation?
4. What descriptors and names do nurse case managers use to refer to outcomes of the interventions?

The target of the investigation is the natural language used by nurse case managers. Nurse case managers are nurses whose practice is case management and who are working in a community-based setting. The nurse case managers' natural language includes the concepts as represented by the words and phrases used by nurse case managers in managing their caseloads. Thus the questions are to elicit the descriptors and names used by nurse case managers; the data elements used by the nurse case managers are supplemental to understanding of the descriptors and names.

Nurse case managers were recruited through the Case Management Society of New England (CMSNE) because their clients included groups and subpopulations of people. A questionnaire was distributed in both online and written formats and participants answered questions based on a case study about subscribers of an insurance company with diabetes mellitus. Diabetes mellitus was chosen from a book of case studies for community health (Fairbanks & Candelaria, 1998) and because it is a common, chronic disease of adults that the nurse case managers would have likely encountered in their work. Descriptors and names were extracted from the responses to the questionnaires, which were then categorized into like groups. The categories and the terms in the categories were analyzed using Spradley's taxonomic techniques resulting in the creation of a tentative folk taxonomy.

Summary

The need to accurately and succinctly define the elements of nursing practice is crucial to assure that the work of nurses is captured and coded in the EHR; equally important is to assure the work captured in the EHR supports the clinical decision-making of nurses. The ANA recognized nursing languages serve that need. As more of healthcare moves out of institutional settings such as hospitals, it is essential that these nursing languages will support nursing practice in community settings. Particularly important are population-based nursing diagnoses, interventions, and outcomes, which are part of nursing practice in the community. This study examines one group of nurse case managers, who provide nursing services to populations of people; it is an initial step to determine the adequacy of the ANA recognized nursing languages for population-based nursing practice.

CHAPTER TWO

LITERATURE REVIEW

This chapter examines the research literature about nursing languages related to population-based nursing care. The research articles associated with nursing languages number in the hundreds, however, since the aim is to identify nursing language for population-based nursing care the search targeted those articles more likely to include population-based nursing care terminology. Before reviewing the research articles, the following will be reviewed: nursing languages, ANA recognition of nursing languages, development of nursing languages, five nursing languages, the theoretical framework for nursing languages and information about case management and nurse case managers. This information serves as background information for the relevant literature.

Languages for Nursing

Effective communication in general requires vocabulary and also for the practice of nursing. Vocabulary is the body of words used in a language and language as defined by the Oxford Advanced Learner's Dictionary (2011) is the "method of human communication, written and verbal, using words in a structured and conventional way" (Oxford Advanced Learner's Dictionary, 2011). Nursing language is the method of communication about nursing. Vocabulary describes the phenomena of the practice of nursing; it also can affect care delivery, practice patterns, client care, and cost of services.

The ANA recognized that nursing languages have different ways of describing and organizing the nursing phenomena. These languages also vary in that they are

referred to as classifications, taxonomies, and data sets; therefore, confusion exists as to whether does the different labels affect the meaning of the terms used in the various nursing languages. A taxonomy is a branch of science that classifies something or it is the classification or a scheme of classification of something. The definition of classification according to Oxford Advanced Learner's Dictionary (2011) is the creation of categories of something; classification is also synonymous for taxonomy. It would appear that classification and taxonomy could be used interchangeably when discussing nursing languages. Data sets, on the other hand, refer to a collection of related sets of information that consist of separate elements. Data sets appropriately define such nursing languages which are a collection nursing phenomena such as the Nursing Minimum Data Set, LOINC®, or SNOMED CT®. Nursing languages, regardless of the type, then, meet the definition of a language.

Nursing Language and ANA Recognition

In 1860 when Florence Nightingale established the profession of nursing, she recognized the value of hospital records to document and inform nursing practice. She laid the groundwork for documentation and illustrated the importance of statistical analysis. Later in the 1950's, Harriet Werley saw the potential of using patient data stored in a computer system to improve nursing practice (Ozbolt & Saba, 2008). It was not until the 1970's with research funded through the Division of Nursing did the research work begin in earnest to develop standardized nursing language. During its development phase there were multiple languages and types of languages i.e. classifications, terminologies, nomenclatures, and taxonomies. Late in the 1980's, ANA recognized the need to have a unified nursing language system as part of the

unified medical language system of the National Library of Medicine. Initially the ANA established methodology to recognize the nursing classification and endorsed the Nursing Minimum Data Set (NMDS). By 1998, however, the ANA needed to adapt to the new terminologies and healthcare standards in response to the proliferation of nursing languages. Therefore, the ANA formed the Committee of Nursing Practice Information Infrastructure (CNPII) to develop recognition criteria to review the standardized languages or terminology systems submitted by the developers. Establishing new criteria moved the focus of nursing languages as a set of classifications to data sets, classifications and nomenclatures. The recognition process has thirteen (13) criteria that delineated and differentiated the different types of terminologies for nursing: data sets, classifications, and nomenclatures. Appendix A lists the ANA criteria.

With the recognition process delineated, the definitions and recognized languages could be confirmed. The ANA defined nursing language as a set of characters, conventions, and rules used to convey ideas and information (Coenen, McNeil, Bakken, Bickford, Warren 2001). The ANA also recognized twelve (12) nursing languages. Seven of the ANA recognized nursing languages were developed specifically for documenting nursing processes to be used in the EHR. The seven languages are Clinical Care Classification System (CCC), Omaha System, International Classification of Nursing Practice (ICNP), Perioperative Nursing Data Set (PNDS), North American Nursing Diagnosis Association – International (NANDA-I), Nursing Intervention Classification (NIC), and Nursing Outcomes Classification (NOC). Two of the nursing languages Logical Observation Identifiers

Names and Codes (LOINC®) and Systematized Nomenclature of Medicine – Clinical Terms (SNOMED CT®) are multidisciplinary terminologies and the 3 remaining languages are used for billing or as data sets: Alternative Billing Codes (ABC), Nursing Management Minimum Data Set (NMMDS), and Nursing Minimum Data Set. It was not until the first ANA recognition process that the term nursing languages was used to name the various systems developed for and/or used by nursing; it is now a standard term used in nursing informatics.

Development of Nursing Languages

Nursing languages have been developed and refined over a forty-year period of time. This section gives a timeline of the development and a sample of the research involved with the development, validation, and mapping of the different nursing languages.

Historical Development

As mentioned in earlier section, Harriet Werley in the 1950's saw the potential of using patient data stored in computer system to improve nursing practice (Ozbolt & Saba, 2008). It was not until the 1970's, that research to develop nursing languages began. With the passage of Medicare and Medicaid in the 1960's, billing for healthcare services changed to accommodate the new requirements of the federal and state governments. Nursing services, which were not traditionally billed services, now became eligible for billing for at least some services. Also there was increased interest by the healthcare industry in developing computer capabilities in the United States and throughout the world. Several governmental agencies funded work to initiate the

process to computerize health care information. These political and financial changes generated a need to label nursing activities and giving birth to nursing languages.

Ozbolt and Saba (2008) described how nursing languages, also called nursing classification systems, began in the hospital setting and in the home care setting.

In the 1970's the Conference of North American Nursing Diagnosis, later incorporated as an Association, was the first organization of nurses to meet and develop a list of diagnoses used by nurses. The list became the nursing language of NANDA. The diagnoses were envisioned from the perspective of the hospital setting; the perspective was expanded to include some diagnoses with more of a community focus in response to the influence of nurses in other countries. NANDA is now known as NANDA International (NANDA-I). During this same period of time, the Omaha Visiting Nurse Association in Omaha, Nebraska was funded through the Division of Nursing to standardize data elements and forms for collecting home care data; the Omaha System was created.

In the 1980's, NANDA-I and the Omaha System continued research and work on their nursing languages, however, work on other nursing languages developed. McCloskey and Bulechek, researchers from the University of Iowa, created the Nursing Interventions Classification. Later was created by Bulechek, Butcher and Dochterman created Nursing Outcomes Classification. In the 1980's the first edition of the book about NANDA-I, Omaha System, NIC, and NOC are published. Despite the growth and development of nursing informatics, nurse informaticists were concerned about a complete listing of the nursing contributions to healthcare (Ozbolt & Saba, 2008). In response a group organized in the late 1980's to identify nursing

diagnosis, nursing interventions, nursing outcomes, and intensity of nursing care; this work led to the data set called the Nursing Minimum Data Set.

By the early 1990's the Home Health Care Classification (HHCC) was developed using the Medicare claims data from home care agencies. With the creation of the HHCC, the ANA recognized nursing languages that expressed nursing diagnoses, interventions, and outcomes had been created. The remaining nursing languages that followed were reference languages i.e. data sets or terminologies. The remaining nursing languages were more data sets and reference terminologies. Data set languages were International Classification of Nursing Project, Nursing Management Minimum Data Set (NMMDS), Nursing Minimum Data Set (NMDS), and Peri-Operative Nursing Dataset (PNDS). The ANA recognized nursing languages used for billing, reporting, and interfacing with computer systems were Logical Observations, Identifiers Names and Codes (LOINC®), SNOMED CT®, and Alternative Billing Codes (ABC).

Unfortunately the availability of multiple nursing languages accompanied by differing licensing fees and conditions made it confusing for healthcare administrators adopting nursing information system. As a result, administrators often chose to use vendor-provided terminologies. Nurse informaticians also recognized this problem so the nursing specialty group of the American Medical Informatics Association (AMIA) convened the first of a series of Terminology Summit. Nurse informaticians also developed the criteria and understanding of what would be needed for nursing languages to be computable and interoperable with each other and other terminologies in healthcare (Bakken Henry, Warren, Lange, Button, 1998) (Hardiker, Hoy, Casey

2000). Therefore beginning the end of the 1990's into the 2000's, the nursing languages were compared to each other and other healthcare terminologies. The comparison work on the nursing languages did not eliminate the confusion but created the map across the nursing languages and of nursing languages to other healthcare languages.

As more of healthcare documentation became computerized such as with the EHR, this compounded the demand for computer programs to provide clinical support and be useful to clinicians, administrators, and researchers. The Centers for Medicare and Medicaid Services (CMS) set standards for meaningful use of EHR. The Office of the National Coordinator for Health Information Technology (ONC) set the standards and criteria for EHR, which have driven many initiatives. This effort also brought to the forefront knowledge representation and management. In particular, vendors of EHR still had to accommodate the natural language unique to clinicians of the different areas of the United States and program a viable option that connects concepts and the associated relationships. The specification of this conceptualization, also known as ontology, is needed for knowledge sharing.

Ontology is a broader scope of information than taxonomies; taxonomies represent a logical structure of a subject. The computer program requires knowledge to be represented in very careful detail so that the relationship among the individual concepts and meaning derived across multiple relationships. The research by Stetson et al. (2002) represented a type of research to develop the ontology for a communication area of medical error among clinicians. The competitiveness among

EHR vendors and technology changes has been a major driver for this type of research and continuing work on the nursing languages.

Research on Nursing Languages

Much of the research specific to nursing languages was related to the development of the nursing languages and comparing nursing languages to each other and other healthcare languages such as ICD-9 codes. The research for nursing language development and refinement was centered on the identification of nursing phenomena or work that is captured in a particular nursing language. During this process researchers determined if the nursing concepts identified in their research fit into or matched one of the nursing languages. The comparison research comprised work that matches the specific terminology of one nursing language to another nursing language or healthcare language; this cross mapping is the basis for determining the interoperability of a nursing language with EHR software and healthcare databases.

The articles in this section are only an example of research related to the refinement of nursing languages. The examples are those articles reviewed in search of terminology for population-based nursing care. In the United States, Lee and Millis (2000) used nurse reviewers to find the common diagnoses in home care records. The list of abstracted diagnoses was matched to NIC/NOC and medical diagnoses. The nurses identified patients' physiological problems mostly in relation to medical diagnoses but other interventions by nurses were captured by NIC and NOC; teaching was the most frequently used nursing intervention in home health care. Outside of the United States, Hur, Kim and Storey (2000) investigated the fit of Korean home health care nurses work into NIC/NOC. The nurses' work was captured by a retrospective

record review by trained research assistants and then analyzed by the researchers. The same researcher matched NIC/NOC to the abstracted data; most of the abstracted data fit into the physiological domain of NIC. The researchers, however, noted there were difficulties including data into a single intervention. Although NIC/NOC described much of the nurses' work, the following items were missing: teaching families to do pressure ulcer care, care of equipment, oral health maintenance, teaching family to give skin care, teaching infection control, teaching wound care, teaching artificial airway management, and teaching tube care.

Burkhart and Androwich (2004) had similar problems of missing items. They used NIC and applied it to the list of interventions by parish nurses. The list was created from a sample of narrative interactions recorded by thirteen parish nurses then analyzed by the three expert parish nurses. The NIC system did not capture 200 interventions such as items related to administrative work of parish nurses like scheduling appointments, nurse activities like community resource assistance and advocacy work such as assistance with obtaining services. Even some matched interventions like dying care were not complete because the NIC concepts were acute care focused.

Keenan et al. (2003) also looked at the usefulness of the NIC and NANDA-I in a home care setting. A combination of questionnaires of home care nurses and observation of nurses by research assistants generated subset of interventions by home care nurses. The interventions were then matched to the NIC and NANDA-I terminology. They found home care nurses use 91 different NANDA-I and 226 NIC

labels. Keenan, Stocker, Barkauskas, Treader and Heath (2003) used the same data to match with NOC; again findings identified 36 of the 89 NOC labels.

The next set of articles relate to the comparison or cross mapping of nursing languages. The Omaha System was the nursing language used by Marek, Jenkins, Stringer, Brooten, and Alexander (2004) when comparing nursing language and CPT codes for capturing the interventions/services provided by advanced practice nurses. Three expert advanced practice nurses reviewed narrative logs written by the advanced practice nurses and the clinical logs from the clinic. A panel of expert advanced practice nurse used a content analysis process to identify interventions. They found that the Omaha System captured the interventions/services including the frequency of interventions for particular service areas whereas the CPT codes only captured about 20% of the nurses' work. They concluded that the advanced practice nurses' work fits better with the Omaha System than the CPT codes.

Other articles include Hyun (2002) mapped ICNP to NANDA-I, NIC, Omaha, and HHCC. The percentages of match among the languages ranged from low 70% to higher 80%. Hardiker (2001) had similar results with mapping ICNP to NANDA-I. An example of a very different approach is by Ciminiello, Terjesen, and Lunney (2009). They used a case study of an older woman living at home with several chronic medical diagnoses and matched NIC/NOC and NANDA-I to the problems the authors identified. Zielstroff, Tronni, Basque, Griffin, and Welebob (1998) mapped three nursing languages of CCC (formerly HHCC), Omaha, and NANDA-I to create a master list of diagnoses and interventions. A taskforce met to plot a master list from the nursing languages started from the nursing language first. There are many other

research articles but the above represent examples of the comparison and cross processing process for nursing languages.

Five Nursing Languages

The five most commonly used nursing languages by nurses are NANDA-I, Omaha System, NIC, NOC, and CCC. Other commonly used languages such as LOINC® and SNOMED CT® are used for primarily for the development of the clinical software. Not included in this section is PNDS, a nursing language used by perioperative nurses. The remaining languages are primarily data sets. Before reviewing the five nursing languages, several national and international standards for EHR software compatibility, interoperability, and information exchange are outlined.

Standards for EHR

Because the nursing languages are included in EHRs, the five nursing languages must meet compatibility, interoperability, and information exchange standards for EHR in addition to being ANA recognized languages. All nursing languages are included in the Unified Medical Language System (UMLS), are Health Level Seven (HL7) registered, are International Organization for Standards (ISO) compatible, and available within SNOMED CT®. Meeting these standards is necessary to be part of any software created to support the EHR plus other clinical support or decision-making software.

UMLS. The UMLS is a compilation of vocabularies in the biomedical sciences. It was created, in 1968, to facilitate the development of computer system with the capability to understand the meaning of the languages of biomedicine and health. It provides a structure for mapping of the multiple languages in nursing and all other

healthcare disciplines; it can be viewed as a thesaurus of medical concepts. It is maintained by US National Library of Medicine and updated quarterly. UMLS can be used for free.

HL7. HL7 registration is crucial for any nursing language. HL7 is a non-profit organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services. HL7 provides standards for interoperability that improve care delivery, optimize workflow, reduce ambiguity and enhance knowledge transfer among all of our stakeholders, including healthcare providers, government agencies, the vendor community, and patients.

ISO. The International Organization of Standards is commonly referred to as ISO. It develops voluntary international standards that give specifications for products, services, and good practices. Since 1947, they have published standards for all types of technology and businesses. The standards for languages convert the language to codes; these codes are used computer systems and other applications. The standards and codes are developed through a global consensus process.

IHTSDO. The International Health Terminology Standards Development Organisation (IHTSDO) is an international, non-profit and owns and administers the rights to SNOMED CT. The purpose of IHTSDO is to develop, maintain, promote and enable the uptake and correct use of its terminology products in health systems, services and products. The focus is on enabling the implementation of semantically

accurate health records that are interoperable. The focus on EHR accuracy and interoperability has made it the standard that all nursing languages must meet.

Nursing Languages

NANDA-I. The North American Nursing Diagnoses Association grew out of a task force at the First National Conference on the Classification of Nursing Diagnoses, held in St. Louis, Missouri, in 1973. The North American Nursing Diagnoses Association was officially founded in 1982; the first taxonomy presented to the Board of Directors was in 1994. NANDA later became NANDA International (NANDA-I) to reflect increasing worldwide interest in the field of nursing diagnosis terminology. Currently a Diagnosis Development Committee approves all diagnoses and supporting materials. The membership votes on the changes approved by the Diagnosis Development Committee. The Taxonomy Committee places diagnoses into the NANDA-I taxonomy.

From the beginning NANDA-I worked to assure that nursing diagnoses were developed through a peer-reviewed process. NANDA-I is taxonomy of nursing diagnoses developed and refined for actual health responses and risk situations. It is applied to individuals, families, groups, and communities (Herdman, 2012). NANDA-I has over 200 diagnoses organized into 13 domains and 6 classes. Domains are as follows: Health Promotion, Nutrition, Elimination and Exchange, Activity/Rest, Perception/Cognition, Self-Perception, Role Relationships, Coping/Stress Tolerance, Life Principles, Safety/Protection, Comfort, and Growth/Development. The NANDA-I diagnoses are concepts constructed by means of a multiaxial system. Axes are as follows: Axis 1 the diagnostic focus; Axis 2 subject of the diagnoses (individual,

family, group, community); Axis 3 judgment; Axis 4 location; Axis 5 age; Axis 6 time (chronic, acute, intermittent); and Axis 7 status of the diagnosis (actual, risk, health promotion). Appendix B displays the domains and classes of NANDA-I.

Omaha System. The Omaha System was one of the early nursing languages; the Omaha Visiting Nurses Association developed it in the 1970's. The Omaha System was developed with support of three Division of Nursing research projects to develop and refine the structure and content of the Omaha System components. Later a fourth National Institute of Nursing Research (NINR) RO-1 grant funded project to address the reliability, validity, and usability of Omaha System. Research about and work on the Omaha System are part of biannual international conferences and meetings. A board of directors reviews any research-based recommendations for the Omaha System; the last publication of the Omaha System was in 2005. It is a classification system with a Problem Classification Scheme (client assessment component), Intervention Scheme (care plan and services component) and Problem Rating Scale for Outcomes (client change or outcome component).

The Problem Classification scheme has four domains: environmental, psychosocial, physiological, and health related behaviors. Each domain has a set of problems related to the domain. The Intervention Scheme has four categories of interventions: teaching, guidance, and counseling; treatments and procedures; case management; and surveillance. This scheme has a list of over 75 targets for the interventions. The outcome scheme evaluates effectiveness with three five-point, Likert-type scales for evaluation. The three concepts used are knowledge, behavior,

and status. Appendix C provides an overview and some of the terminology of the Omaha System.

NIC/NOC. The University of Iowa College of Nursing developed both NIC and NOC. NIC and NOC were funded through the NINR and Sigma Theta Tau to add to the Nursing Minimum Data Set. The results of the research led to the first publication of NIC in 1992 and NOC in 1997. In 2008, the 5th edition of NIC was published and the 4th edition of NOC. The Center for Nursing Classification and Clinical Effectiveness, which is housed at the University of Iowa, supports the research teams, provide consultation, and administer licensing and other support through Elsevier.

NIC is a comprehensive classification of interventions performed by nurses. The classification includes the interventions that nurses do on behalf of patients, both independent and collaborative interventions, both direct and indirect care. The seven domains of NIC are: Physiological: Basic, Physiological: Complex, Behavioral, Safety, Family, Health System, and Community. NOC is also a comprehensive classification, however, it classifies patient/client outcomes developed to evaluate the effectiveness of the interventions performed by nurses. NIC uses a five-point Likert scale to evaluate effectiveness. The seven domains are: Functional Health, Physiologic Health, Psychosocial Health, Health Knowledge & Behavior, Perceived Health, Family Health, and Community Health. See Appendix D for example of a NIC diagnosis and Appendix E for an example of a NOC outcome.

CCC. Dr. Virginia Saba and a research team were contracted with the Health Care Financing Agency, now known as the Centers for Medicare and Medicare Services (CMS), to develop a computerized method for assessing and classifying patients for

the prediction of nursing resources needs and for evaluating the outcomes of care. Ultimately the findings of the research were converted to a classification system originally known as the Home Health Care Classification, later known as Clinical Care Classification.

CCC has, at the highest level, four healthcare patterns of health behavior, functional, physiological, and psychological. The 21 care components are distributed among the four patterns. The care components contain the two terminologies of diagnoses and interventions. The outcomes are a list of expected and actual outcomes. The expected outcomes are improve, stabilize, and support; the actual outcomes are improved, stabilized, deteriorated. Appendix F shows the organization of CCC.

Summary

All five nursing languages are research-based and classify nursing phenomena in concrete, discrete categories and terms; all are organized from general to more detailed. They are all included in UMLS, registered in HL7, ISO compatible, mapped to SNOMED CT® and LOINC®. Each nursing language, however, has its separate organization of the nursing concepts and uses different labels for their more general domains. Nonetheless they contain some common areas.

First all of the nursing languages have terminology related to physiology. Omaha and CCC label the domain “physiological”, NIC separates physiological into “basic” and “complex”, and NOC labels it “physiological health”. NANDA-I, on the other hand, has several labels related to physiological: perception/cognition, nutrition, elimination & exchange, sexuality (sexual function and reproductive classes), safety/protection (infection, physical injury, defensive processes, and

thermoregulation classes), growth/development and physical comfort. Another area with common terminology was around psychological terms. NANDA-I labels a group of nursing diagnoses as “coping/stress tolerance”. The Omaha System and CCC includes the label of “psychological”, NOC has a “psychological health” outcome, and “behavioral” as a category of interventions in NIC. The last common area is with health behaviors; with the exception of NIC, the other four nursing languages use health behavior type label. NANDA-I has two classes, health awareness and health management, under the domain of health promotion. The Omaha System and CCC use the label health behavior whereas NOC has “health knowledge and behavior”. The other labels for the domains have fewer commonalities. Table 1 compares the domain level for each nursing language.

The nursing languages have few commonalities; however, they have been cross mapped to each other so the commonalities exist only at the detail, distinct concepts or phenomena level. This is consistent with Mc Cormack and Jones (1998) who noted there is not a single categorical structure across the nursing languages. Although it does not affect the integrity of the nursing languages, it does add to the confusion of what are the contributions by nursing.

Table 1
Comparison of Domains for 5 Nursing Languages

NANDA-I	Omaha System	Clinical Care Classification	NIC	NOC
<ul style="list-style-type: none"> • Perception/ Cognition • Nutrition • Elimination & Exchange • Sexuality (function) • Safety/ Protection (infection, physical injury, defensive processes, and thermoregulation) • Growth/ Development • Comfort (physical) 	<ul style="list-style-type: none"> • Physiological 	<ul style="list-style-type: none"> • Physiological 	<ul style="list-style-type: none"> • Physiological Basic • Physiological Complex • Safety (for individuals) 	<ul style="list-style-type: none"> • Physiologic Health
<ul style="list-style-type: none"> • Coping/ Stress Tolerance 	<ul style="list-style-type: none"> • Psychosocial 	<ul style="list-style-type: none"> • Psychological 	<ul style="list-style-type: none"> • Behavioral 	<ul style="list-style-type: none"> • Psychosocial Health
<ul style="list-style-type: none"> • Health Promotion 	<ul style="list-style-type: none"> • Health Behavior 	<ul style="list-style-type: none"> • Health behavior 		<ul style="list-style-type: none"> • Health Knowledge & Behavior
<ul style="list-style-type: none"> • Activity/ Rest 		<ul style="list-style-type: none"> • Functional 		<ul style="list-style-type: none"> • Functional Health
<ul style="list-style-type: none"> • Self-Perception • Sexuality (perceptions) • Life Principles 				<ul style="list-style-type: none"> • Perceived Health
	<ul style="list-style-type: none"> • Knowledge 			<ul style="list-style-type: none"> • Health Knowledge & Behavior+
<ul style="list-style-type: none"> • Role Relationships • Comfort (social) 		<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Family • Community 	<ul style="list-style-type: none"> • Family Health, and Community Health
<ul style="list-style-type: none"> • Safety/Protection (environmental hazards, violence) • Comfort (environmental) 	<ul style="list-style-type: none"> • Environmental 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Safety (hazards in environment) 	<ul style="list-style-type: none"> •
			<ul style="list-style-type: none"> • Health Care System 	
	<ul style="list-style-type: none"> • Case Management • Surveillance • Treatment & Procedures 			

Note: First three rows have the most commonalities: physiological, psychological, and health behaviors

Theory

According to Spenziale, Streubert, and Carpenter (2003) a theory is a set of interrelated constructs, definitions, and propositions that present a systematic view of a phenomena by specifying relations among variables with the purpose of explaining and predicting that phenomena. Using this definition, the different nursing languages are not theories, in fact, they are not derived from a specific theory. The purpose of nursing languages is to define, organize, and catalog the concepts used in nursing for the purpose of documentation, communication, billing, and evaluation. They were never intended to explain or predict nursing phenomena, rather to operationalize nursing concepts into concrete, observable labels. The developers of the nursing languages examined the particular concepts then organized and labeled these concepts, which could be argued is knowledge building. Nonetheless the original rationale for the development of the nursing languages was not theory development or knowledge building. They were created in response to the political pressure for better reimbursement methodologies and documentation systems.

Inductive and Deductive Contribution

As stated above, nursing languages were not developed for the purpose of knowledge building; nonetheless, they can contribute to nursing knowledge. The five more commonly used nursing languages by nurses were developed through inductive and deductive processes. Both inductive and deductive processes advance the knowledge of nursing just from different perspectives. From the deductive perspective was the development of NANDA-I. A group of expert and interested nurses, later known as North American Nursing Diagnosis Association, developed the initial list of

diagnoses based on the expertise of nurses using the perspective of human responses i.e. naming client problems from client's response to diseases or problem and nursing care to the responses. The process moved from the more general perspective of human response to the specific list of diagnoses.

The other nursing languages developed from the inductive process. One of the first languages developed was the Omaha System developed by the Visiting Nurse Association (VNA) of Omaha for the purpose of a computerized management information system that was organized around clients who receive the services as opposed to simply tracking the multidisciplinary practitioners and services. The initial research included some retrospective review of charts and the use of focus groups and practitioner surveys; however, the majority of the data came from practitioners submitting data about actual client services provided. The data were analyzed with content analysis and expert panels.

The Nursing Intervention Classification (NIC) was developed as a way to describe what nurses do; the goal was to describe the interventions performed by nurses. A content analysis and expert nurse panel methodology was used to create the initial list. The data were retrieved from retrospective review of hospital records. At a later date, data were captured from home health care agencies. A similar method was used to create the initial set of nursing outcomes for the development of Nursing Outcomes Classification.

In 1991, the Home Health Care Classification later renamed Clinical Care Classification was developed from a national sample of home health care patient records by Saba (1991). This study was driven by the need for Medicare to reimburse

home care services. By reviewing Medicare billing records and content analysis of the data from the record review, the clinical care classification was established with a list of nursing diagnosis, intervention and outcomes. In the initial work some of the record review was computer-assisted. Although the nursing languages were not developed specific for knowledge building, the process of their development using both the inductive and deductive approaches helped to identify and label nursing phenomena, which is useful for building of nursing knowledge and theory.

Nursing Languages As Framework

Although nursing languages are not theories or based on a particular theory, they have provided a framework some nursing research i.e. an organizational structure for data, tool to collect data, definitions of variables, etc. The following are examples of using nursing languages as a conceptual framework or guide for the study. Ahern (2003) implemented use of NIC/NOC and NANDA-I to improve communications among discharge planners/case managers, clinic nurses, and nurses in community hospitals. It was reported how this took out the “fuzzyness” of the communication. Naylor, Bowles, and Brooten (2000) conducted a randomized clinical trial of the effectiveness of advanced practice nurses coordinating discharge of 124 clients with cardiopulmonary conditions. The Omaha System was the nursing language used to code the interventions and services. The Omaha System was also the nursing language selected to determine the feasibility of abstracting, integrating, and comparing effective use of a single nursing terminology across vendors (Westra, Oancea, Savik, and Marek, 2010). The team extracted OASIS data and Omaha data from fifteen home health care agencies. Despite missing and inconsistent

documentation it was clear that the Omaha System could provide meaningful data for evaluation and planning. Another clinical trial, conducted by Bakken et al. (2005), used a nursing language as a tool to support decision-making. Community based nurses monitoring medication treatment for clients who are HIV positive used HHCC to tailor their recommended actions as part of a client adherence profiling protocol. These studies support the notion of nursing languages as a basis from which to develop and evaluate nursing work.

As stated earlier, nursing languages were developed to label and organize nursing concepts for professional practice. They were not designed to develop theory; however, they could play a role in theory development.

Case Management and Nurse Case Managers

Case management has multiple definitions: it can be defined as an intervention, a program and also to an area of practice. Several of the nursing languages identify case management as an intervention. For the nurse case managers in the study, their practice area was case management. The definition of nurse case management is discussed in this section.

Definitions

The Case Management Society of America (CMSA, 2009) defines case management as a collaborative process to meet individual needs through communication and available resources to promote quality, cost-effective outcomes. The American Nurses Association (ANCC, 2003) also defines it as a healthcare delivery process whose goals are to provide quality health care, decrease fragmentation, enhance the client's quality of life and contain costs. The definition

continues with case management as supporting care through process of evaluation and assessment of needs of individual in context of population. Again it defines case management as a process.

On the other hand case management is also referred to as an intervention. Nursing languages such as the Omaha System (Martin, 2005) and NANDA-I (Herdman, 2012) typically identify case management as an intervention; case management is also incorporated as an intervention in a prominent public health nursing textbook (Neis & McEwen, 2011) and in public health nursing core competencies (QUAD Council, 2011). It should also be noted that Neis and McEwen (2011) identify case management as an area of practice.

One could also approach the definition from the perspective of role theory i.e. role occupant and role performance (Hardy & Conway, 1978). Case management is a role for a nurse and defined by the activities that are performed. Thus if a nurse is performing the activities identified with case management, the nurse is then a case manager practicing case management.

Working Definition

For this study, case management as a practice was the working definition; case management was considered a process thus defined as practice. Nurses and other professional disciplines practicing case management have formed the professional organization, Case management Society of American (CMSA), and nurses have a professional certification through the Credentialing Center of the ANA. The CMSA has developed a defined scope of practice and standards of practice.

Nurses certified as case managers work in a variety of settings and job titles. Park and Huber (2009) described the characteristics of 24,085 certified case managers, ninety-three percent (93%) who were nurses. The top five work settings for nurses were independent case management companies (19.0%), hospitals (18.1%), health insurance companies (15.7%), managed care companies (13.9%), and Workers' Compensation agencies (10.8%). The job titles for case managers of all disciplines were not uniform but slightly more than two-thirds (68.3%) were titled case managers. Nurses more commonly had titles of case manager or care coordinator. There were other titles, however, such as administrator or manager, rehabilitation counselor, utilization reviewer, clinical or registered nurse, social work, discharge planner, insurance benefit manager, admission liaison, vocational evaluator, physical therapist, bill auditor, occupational therapist and work-adjustment specialist. Of course, some of the titles are discipline specific.

Relevant Literature

In order to identify nursing language for population-based nursing care, the search targeted those articles more likely to include population based nursing care terminology. A systematic database search of CINAHL, PUBMED, and MEDLINE was conducted to identify research studies, clinical trials, observational studies, and articles reporting results of studies. Using the keyword nursing diagnosis produced literally tens of thousands of articles. Even after limiting the search from the year 2000 to present the yield was 4,692. A search using the keywords nursing diagnosis and population resulted in 111 separate articles, however, the vast majority of articles referred to a population of clients and not about population-based care. Other

keywords used were as follows: nursing classification, nursing terminology, nursing informatics, nursing informatics and research, nursing diagnosis and research, nursing classification and research, and nursing terminology and research. Results from searches using the other keywords produced only a few additional articles. Ultimately there were almost 4,000 articles. The majority of articles involved research in the United States but was not limited to the United States.

The abstracts of the large number of articles were read for potential sources of population-based nursing terminology. Articles were selected based on the sample of nurses and the clinical setting in which the research was conducted; it was then judged how likely the article would be to include population-based care and services. The original design for the search was to target articles involving case managers, however, the number of articles were less than 10 articles. Therefore an article was deemed suitable if that had a sample of nurses who had titles or descriptions as case managers, discharge planners, public health nurses, home care nurses, hospice nurses, or parish nurses. Also articles were deemed suitable that indicated the clinical site or setting that was in the home, community, or clinic. Both factors, sample and clinical setting, were used to detect potential studies having a population-based nursing practice focus.

Based on the above criteria, 17 articles were deemed as suitable. The articles could be sorted into four types of nursing practice areas; articles were sorted into the groups if the practice of the nurses in the sample fit and/or the clinical setting placed it into the group. The 4 groups of nursing practice: public health nursing (30%, n=5), home care practice (30%, n=5), discharge planning practice (17%, n=3), and a miscellaneous category (23%, n=4). The job title, place of work, and descriptions of work were used

to categorize the articles, so for example, if the nurses were referred to as home care nurses making home visits then the article was categorized as home care practice. When articles did not fit completely into a single category they were categorized as miscellaneous. An example of this category was one where the job title was advanced practice registered nurses and the work included clinic visits and some home visits. Since it included two practice types and settings, it was categorized as miscellaneous. The articles were reviewed for the use of nursing language(s) for population care, and if not specifically a nursing language, then what potentially useful concepts or terms were used.

Public Health Nursing Practice

The practice of public health nursing can be directed to individuals, families/groups, or populations thus the first group of articles. The public health practice category has articles from within and outside the United States. The article by Aquilino Lober, McClelland, and Tarbox (2002) was the only article that specifically identified population-based care with a nursing language. Aquilino Lober et al. (2002) matched public health competencies to the new community domain in NIC. The authors developed a matrix that related the NIC interventions to the core functions of the public health; selected interventions were used to display the different levels of public health nursing i.e. individual, family, community, and health system for each of the core public health competencies. Child abuse was the selected problem used to demonstrate the assessment competency; the individual intervention was health screening, the family was child protection and the community was surveillance. For the policy development competency, the individual example was patient rights

protection, the family included cultural brokerage, the community was policy development, and health system was health policy monitoring. The last competency of assurance had the example of social support enhancement for the individual, family support for the family, case management as a community intervention, and community disaster preparedness for health system. This article demonstrates that NIC interventions met the public health competencies, however, it was not a research article based on analysis of data.

On the other hand, two articles reported on efforts in a public health department to develop and evaluate a charting system using a nursing language. First the article by Parris et al. (2002) described the process of using the NIC, NOC, and NANDA-I as the conceptual framework for revising the forms used in the family folders of public health agencies. The sample forms and description characterized the individual and family focus of the public health nurses work. This new charting format was evaluated and reported in the article by Riveira and Parris (2002). The researchers conducted a retrospective chart review of randomly selected family folders (n=1,500) to evaluate the capacity of selected diagnoses and interventions to describe public health nursing work. The 50 selected nursing diagnoses reflected their families who were pregnant and/or had infants and young children the household. The diagnoses, in order from most frequent to least frequent, were knowledge deficit, learning need related to postpartum/infant care, growth and development altered/at risk for, infection/at risk for, parent child attachment, altered/at risk for, breathing pattern impaired/at risk for, nutrition altered less than body requires/at risk for, therapeutic regimen: individual ineffective management/at risk for, fluid volume deficit at risk for, caregiver role

strain/at risk for, and noncompliance/compliance altered. Of the possible 128 interventions, 106 were used and the interventions of teaching: infant care, postpartal care, and teaching: nutrition, birth to 12 months accounted for more than 40% of the interventions. The researchers also analyzed the relationship among the diagnoses and interventions confirming the proper use of the new forms they were evaluating. The results were consistent with diagnoses and interventions related to health promotion and disease prevention as a predominate concern for public health nursing.

The research by Monsen and Newsom (2011) moved from the work of the nurse providing direct care to that of a public health nursing supervisor to the Omaha System. This was a case study of one supervisor to determine the utility of Omaha System in describing the supervisor's work. The supervisor documented her management interventions using the Omaha System in the agency's clinical software. After a 5-month period the researcher retrospectively examined a convenience sample of the manager's clients i.e. individual employees, work groups, project teams, and other groups. The 780 interventions for the 79 clients appeared in all the domains of the Omaha System. It suggested that the Omaha System has the potential to document manager's work for community wide needs and efforts i.e. population level care.

The next article in this category brings a different perspective. Consider a research project with parish nurses representing a practice such as a traditional public health nurse. Burkhardt and Androwich (2002) examined the narrative documentation of one-on-one client interactions by 13 parish nurses across the United States. The work by parish nurses was primarily focused on individuals but also involved work with the families and sometimes the entire community of the church. Interventions recorded by

the parish nurses were mapped to NIC. The use of expert nurses with parish nursing and experts with mapping were employed to assist with the analysis. The expert parish nurses were also surveyed in terms of their satisfaction with the NIC documentation.

Of the 3,059 separate interventions, 93% of the interventions mapped to NIC interventions. The most frequently used was surveillance (51.5%), spiritual care (19.54%), and admission care (9.77%). The most frequently used classes in NIC were risk management (59.36%), coping assistance (35.97%) and health medication (17.80%). The most commonly used domains were behavioral (40.32%) and health system (26.69%). There were, however, 200 interventions that could not be mapped. Most of the interventions were divided into three foci. One was an administrative focus such as scheduling appointments, attempted visits, and case closures. Second was related to direct care such community resource assistance and volunteer facilitation, community resource assistance, self-care instrumental activities of daily living, empowerment. The last focus was a need for community interventions such as transport, supply management, and dying care. The remaining list of interventions was for work such as research, interpreting insurance benefits, third party interactions, multidisciplinary care conferences (with health care and non-health care people), and information exchange.

Home Care Nursing Practice

The home care practice category contains three articles from the United States and two articles from other parts of the world. Lee and Millis (2000) from the United States reviewed home care records of 224 patients discharged from the hospital to home care. They identified the most common medical and nursing diagnoses and

interventions identified by the home care nurses through a retrospective record review first using ICD-9 codes and then NIC and NOC. Although 28 nursing diagnoses were identified, the six most common were alteration in mobility, alteration of cardiac status, alteration of comfort, pain, knowledge deficit in intravenous therapy, alteration in breathing pattern, alteration in nutrition, and potential/actual impairment of skin integrity. The interventions fell into three categories of assessment, intervention, and other. Interestingly, the medical diagnoses correlations were limited to physiological problems. The diagnoses and interventions identified indicated that nursing care was directed to individuals as opposed to populations.

Westa, Oancea, Savik, and Marek (2010) used the Omaha System as a single language to determine the feasibility of abstracting, integrating, and comparing efficiency and effectiveness across home care agencies. The study involved 15 home care agencies from two different software vendors. Data were extracted from 2900 clients who had two assessments using the Medicare Outcome and Assessment Information Set (OASIS) then compared using the Omaha System. It was determined that a nursing language could be a feasible option, although it also brought attention to problems of missing data elements. Overall the most common domains in the Omaha System were physiological, other health related, psychosocial and environmental; the problems varied across agencies except for neuro-musculo-skeletal function and medication management. Overall surveillance was the most common intervention followed by teaching, guidance and counseling. The home care services are predominantly directed to individual care. Even though the Omaha System has

consideration for family and community problems, these are related to the individual and not a population.

Keenan et al. (2003) also used a multi-site approach to assess reliability, validity, and sensitivity of NOC for home care practice. A retrospective record review of 258 patients from two home care sites showed that NOC, with few exceptions, captured the outcomes. Over the course of care, 36 NOC outcomes remained the same or changed positively except for circulation status, knowledge: disease process, knowledge: treatment regimen, and self-care: toileting. The outcomes were related to individual care.

Similar results were found outside the United States. Hur et al. (2000) reviewed home care records from an agency in South Korea to determine if the interventions in the home care records matched NIC interventions. They chose 20 nursing diagnosis to study and found six were in 20% or more of the records so concentrated on the diagnoses of impaired skin integrity, risk for infection, altered nutrition, risk for impaired skin integrity, knowledge deficit, and pain. Only 10 of the 30 interventions identified matched the NIC interventions. They noted some problems dealing with services that fit multiple categories or not appearing to fit in any categories.

Another study outside the United States was by Kennedy (2004) in Scotland. It was not specifically about nursing languages but was designed to develop a typology of knowledge for district nurses. Unlike many studies involving record reviews, this was an ethnographic design interviewing 11 district nurses. The types of knowledge required for a district nurse were getting to know the patients in their own setting, getting to know carers, knowing what needs to be done now, knowing what might

happen in the future, knowing/recognizing knowledge deficits, and knowing community resources and services. The typology, as noted, was about what district nurses need to know and not about nursing language. Nonetheless it gives insight into the language needed to represent the knowledge used by district nurses. In this study community and services were identified but these knowledge areas were as they were related to individual care.

Discharge Planning Practice

The three articles in this category involve nurses in the role of discharge planning from hospital to community settings. Research by Shepard (1993) is older but investigated what nursing diagnoses were present from records of patients with lung cancer and discharges from a hospital to home or hospice care. Data was extracted from a sample of 196 patient records. Using multiple logistic regression, the following were predictors for home and hospice services. Home care included altered nutrition: less than body requirements, bathing/hygiene self-care deficit, high risk for infection, and high risk for injury. Hospice referrals predictors were anticipatory grieving, impaired skin integrity, high risk for impaired skin integrity, and pain. This was an early study not using a particular nursing language but supported the applicability of nursing diagnoses to describe the complexity of care in community.

Likewise in the study by Naylor et al. (2000), problems experienced by patients transitioning from hospital to home were identified. A randomized clinical trial was conducted examining the effectiveness of Advanced Practice Nurses (APN) using a comprehensive discharge planning and home follow up protocol. Of the 124 older adult patients in the intervention group, 30 patient records were randomly selected for

content analysis of the narratives. Fifteen (15) patients had medical diagnoses and 15 had surgical diagnoses. The study group was blinded to APNs. Doctorally prepared nurses with experience using the Omaha System coded the elements/concepts in the narratives; interrater reliability was tested. The 5000 data elements were coded using the classification scheme and the intervention scheme of the Omaha System. The top 10 problems for medical patients were discharge planning, circulation, prescribed medication regime, nutrition, health care supervision, respiration, vision/hearing, neuro-musculo-skeletal function, emotional stability, and income. Circulation was the problem for the majority of the medical patients. Surgical patients had the following top 10 problems: discharge planning, circulation, pain, prescribed medication regime, sleep/rest pattern, emotional stability, bowel function, respiration, neuro-musculo-skeletal function, and digestion-hydration. The interventions for all 30 patients were divided among the four categories of interventions in the Omaha System as follows: 66% of interventions were surveillance, 20% were teaching/guidance/counseling interventions, 14% were case management interventions, and less than 1% of the interventions were treatment and procedures. Case management activities included communication, coordination, and setting up follow-up services.

Bowles et al. (2009) extended earlier work described above by soliciting from nurse experts what items are necessary to make a good referral to home care. Initially the sample was medical records from 355 older hospitalized adults but case studies were added later to broaden the diagnoses being reviewed. The experts (four nationally known experts and four local clinicians) reviewed the abstracted data from the sample and were asked to decide to refer or not refer. If there was not agreement

then a Delphi round was posted for further information. In addition there were seven focus groups of the experts to validate the ontology of the conceptualization for computerization and the cases being reviewed. Also factors identified during the process were discussed. Those factors identified by the experts as important were added to the analysis. Descriptive statistics documented the frequency of the factors and of the 20 factors identified, a logistic regression model was to determine the factors for the experts' referrals. The six factors identified were how often help is available, walking function, subjective health rating, length of stay, depression score, and number of co-morbidities. This articles as with the previous two articles provides information about the diagnoses and interventions related to discharge planning; however, the focus for all articles was clearly on an individual level.

Miscellaneous Practice

The miscellaneous practice type encompasses nurses working as research nurses or nurses whose practice included multiple sites; the work did not fit into the other categories yet could conceivably yield information about population level care.

Zielstroff, Tronni, Basque, Griffin, and Welebob (1998) led a taskforce to prepare a recommendation for a terminology to improve the adherence to a regimen used by the large medical center and its ambulatory centers and health clinics. The taskforce mapped the 396 descriptive terms from their record review process to the nursing languages of CCC, Omaha System and NANDA-I. Because of the different structures of the three nursing languages, the taskforce developed a list of preferred terms. The preferred terms were all individual care focused.

The client adherence profiling intervention tailoring (CAP-IT) tool has been used to improve adherence to HIV medications. The tool is based on research findings that multi-faceted, individualized communication is crucial. Bakken, Holzemer, Portillo, Grimes, Welch, and Wantland (2005) proposed that nursing language could assist with the detailed description needed for individualized communications. The researchers used the Home Health Care Classification (HHCC) later renamed Clinical Care Classification as way to calculate the dose of the interventions. After clients completed the CAP-IT, nurses used the responses from the tool to develop nursing diagnoses and then tailored the intervention to the clients' communication preferences and lifestyles. They documented the interventions from HHCC. The analysis included a hierarchical multiple regression to predict the total number of interventions. It was determined that a positive relationship existed between the dose of nursing defined by HHCC to the clients' adherence to medication regimens. Although it was an outpatient setting, the focus was on the care given to the individual patients.

Schooneman (2002) looked at the work of nurses from three community-nursing centers to describe the nature of surveillance in a community practice. The clinic used an automated record system that described nursing diagnoses and interventions with the Omaha System. Surveillance is an intervention in the Omaha System. The records of 1,506 unduplicated clients receiving 5,428 encounters were reviewed yielding surveillance as 27.1% of all interventions. Surveillance was associated with circulation and nutrition diagnoses. The remaining interventions were health promotion and disease prevention. The focus was again on individual clients.

Lastly Merek, Jenkins, Stringer, Brooten and Alexandeer (2004) studied the encounter logs of eight advanced practice registered nurses treating perinatal clients. The nurses followed clients at the clinic, home, and via phone calls. The researchers identified the diagnoses and interventions in the encounter logs using the Omaha System and medical billing CPT codes. They compared the interventions coded by each terminology and coding system. Although CPT codes captured only a small portion of the interventions by the nurses, they most frequently defined interventions in the clinic and home setting. On the other hand the work was captured in the Omaha System's domains of Case Management, Surveillance and Health Teaching, and Guidance and Counseling. The care was still individual focused.

Summary

Research that specifically informs population based nursing care is limited. Aquilino Lober et al. (2002) presented a scholarly description of the relationship of public health competencies to NIC interventions and demonstrated that NIC can capture the interventions for population based nursing care. Even though it represented evidence that NIC could be useful, it was not based on data but from standards. Also the question remains if these interventions would work for nurse case managers. The other articles, even though they did not explicitly reference nursing practice for populations, provided terms useful for diagnoses and interventions related to populations. The articles about discharge planning (Naylor et al, 2000) (Bowles et al 2009) had the most terms that might be identified by nurse case managers; in particular, were the identification of hospitalization, length of stay, and complication in hospital. The identifiers and names that are most likely to be useful are those that

pertain to teaching, health care supervision, income, surveillance, and knowledge deficits. Table 2 displays the identifiers and names found in the relevant articles.

Review of the selected articles indicated a focus of nursing care on individuals with some care targeted to families and small groups. Very few diagnoses and interventions were identified for population-based care; however, review of the identifiers and names in the article suggest that they may be useful elements for documenting population-based care. In addition to the identifiers and names, research involving nurse case managers was missing. Although the practice of the nurse discharge planners was similar to case managers, their practice the focused on the individual as opposed to the population.

Table 2
Identifiers and Names Used in Relevant Literature

Public Health Nursing Practice	
Aquilino Lober M, McClelland E, Tarbox M 2002	Surveillance, Health policy monitoring; Teaching, Health education; Continuity of care enhancement, Brokerage; Immunizations, Risk Identification; Health policy.
Parris KM, Place PT, Orellana E, Calder J, Jackson K, Karolys A, Meza M, Middough C, Nguyen V, and Shim N.2002	Knowledge deficits; Alt breathing patterns; Skin integrity; Learning needs postpartum care; Parent-attachment,
Rivera JC, Parris KM 2002	Knowledge deficit; Teaching; PP&Infant care; Growth & development; Infection risk; Parent-child attachment; Breathing patterns; Nutrition altered; therapeutic regimen; individual ineffective management/at risk for; fluid volume deficit at risk for; care giver role strain/at risk for; noncompliance; Teaching.
Monsen KA & Newson ET (2011)	62 interventions listed covering each of the Omaha System domains.
Burkhart L, Androwich I (2004)	Surveillance; Medication management; Spiritual care; Transportation; Interaction with non-health care groups; Administrative work
Home Care Nursing Practice	
Lee T, Millis M (2000)	Most common Alteration in mobility; Alteratin of cardiac status; Alteration of comfort; Pain; Knowledge deficit in intravenous therapy; Alteration in breathing pattern; Alteratin in nutrition; Potential/actual impairment of skin integrity.
Westra B, Oancea C, Savik K, Marek KD (2010)	Surveillance; Medication management

Keenan G, Stocker J, Barkauskas V, Johnson M, Maas M, Moorhead S, Reed D (2003)	Knowledge deficit; Alt cardiac status; self care: toileting; Treatment regimen.
Hur HK, Kim SS, Storey m (Mi Hae Suh) (2000)	Knowledge deficit; Risk for skin integrity; Risk for infection; Altered nutrition;
Kennedy (2004):	Typology of Knowledge: Getting to know the patients in their own setting, Getting to know carers, Knowing what needs to be done now, Knowing what might happen in the future, Knowing/recognizing knowledge deficits, Knowing community resources and services.
Discharge Planning Practice	
Shepard KC (1993)	Anticipatory grieving; Bathing/hygiene self-care deficit; Alt nutrition: less than body requirements; Risk for infection; High risk injury; Impaired skin integrity; Pain
Naylor MD, Bowles KH, Brooten D (2000)	Health care supervision; Discharge planning; Income' Sleep/Rest pattern; Circulation; Medication regime; Nutrition; Respiration; Vision/Hearing; Neuro-musculo-skeletal functions; Emotional stability; Pain; Bowel function; Digestion-hydration.
Bowles KH, Holmes JH, Ratcliffe SJ, Liberatore M, Nydick R, Naylor MD (2009)	Functions: bathing, eating, walking, dressing; Living arrangement; Risk of falls; Help available; Income; Mental status/Depression; Subjective health rating; Age; Co-morbidity; Hospitalization past 6 months; Length of stay; Complication in hospital; Admission day surgery.
Miscellaneous Practice	
Zielstroff RD, Tronni C, Basque J, Reeves Grffin L, Welebob EM (1998)	Sanitation health promotion, Polypharmacy; Income; Caretaking/Parenting, Dying process; Body temperature, Energy field disturbance, Relocation stress syndrome, Endocrine alteration.
Bakken S, Holzemer WL, Portillo CJ, Grimes R, Welch J, Wantland D (2005)	Assess role performance; Teaching role performance; Meals: manage/coordinate; IADL assistance actions, energy conservation; Medications; Coping.
Schooneman C 2002	Surveillance.
Marek KD, Jenkins ML, Stringer M, Brooten D, Alexander GL (2004)	Surveillance of sickness/injury care, Screening, Lab findings; Sickness/injury communications, Nutrition, Medical/dental care; Medical/dental care, family planning, communications; Community Resources; Support systems, Caretaking/Parenting, Transportation; Signs and symptoms of pregnancy; Specimen collection; Food; Lab findings; Medications.

CHAPTER THREE

METHODOLOGY

The aim of the study is to explore the natural language used by nurse case managers i.e. the words used by nurse case managers specifically about their work with a population of people with diabetes mellitus, a common chronic disease familiar to nurse case managers. The secondary aim is the beginning process to begin the process of matching identified population-centered language used by nurse case managers to ANA recognized nursing languages. If the words used the nurse case managers do not fit into the nursing languages, future research would be needed to develop new terminology for the nursing languages to capture this practice.

This is an exploratory study using an anonymous online questionnaire with nurse case managers employed in community-based settings in the New England area. The questions for this investigation are as follows:

1. What descriptors and names do nurse case managers use to refer to subpopulations?
2. What are the data elements used by nurse case managers to assess subpopulations?
3. What descriptors and names do nurse case managers use to refer to interventions for the subpopulation?
4. What descriptors and names do nurse case managers use to refer to outcomes of the interventions?

Research Design

The study used a cross-sectional research design employing an anonymous online questionnaire with nurse case managers. The objective was to collect a number of

descriptors and names i.e. data points; the data were collected during one collection period. The use of a questionnaire was due to the unavailability of data through standard clinical and billing documentation systems. Nurse case managers document work using a variety of paper and computer systems; however, to access these records was not practical primarily because of the proprietary nature of their work. Additionally, the questionnaire captured written documentation. Because of the need to document work in the EHR, it is necessary to have written documentation for review. Furthermore, there were no existing clearly defined terms due to the scarcity of existing research related to populations.

The primary interest in the natural language of nurse case managers to assure that their work is captured in the EHR; capturing nurse case managers' work requires coding of a traditionally written form of documentation into the EHR. Thus, the terms used by nurse case managers are terms usable for coding into the EHR. Using a written format such as an online survey that includes typed responses therefore matches the focus on the written documentation of the EHR.

The literature review outlined some of the investigation into ANA recognized nursing languages; however, research related to populations was essentially absent from the literature. The work by nurse case managers is often with groups or subpopulations of people, making them an important good group to study. Unlike the nurses in the existing literature, nurse case managers work in settings as insurance companies, managed care companies, etc. Their inclusion in the study extends research into another new area of practice.

Previous research efforts for other types of nurses and other practice areas often started with analysis of the documentation and clinical notes; however, for the case

managers there is not standard clinical or billing documentation. Additionally, the online questionnaire increases the number of nurse case managers who can participate in a shorter period of time. Although individual interviews and/or focus groups may have captured more in-depth understanding of each of the words used by nurse case managers, the questionnaire broadens the sample to capture a larger, initial set of data to investigate the nursing languages used by nurse case managers.

Sample

The study population was drawn from the Case Management Society of New England (CMSNE), part of the professional organization of Case Management Society of America. CMSNE is a network of health care professionals working in the specialized practice of case management. The over six hundred (600) members hail from Maine, Vermont, New Hampshire, Massachusetts, and Rhode Island. Membership is open to all disciplines practicing case management; however, nurses are the overwhelming majority. CMSNE estimated that about 400 members are registered nurses. Response rates are often low for online surveys but a good response rate was anticipated because this organization has active, engaged members. The goal was 100 participants or approximately 25% response rate. The University of Rhode Island Institutional Review Board approved the study with expedited review.

The approach was a purposeful sampling design to capture a sample of nurse case managers, primarily those working in community-base settings. The procedure for the sampling was a series of steps. The first step was identifying a potential group of nurse case managers. As indicated earlier, the CMSNE, a professional organization, was an

ideal source since the organization has a membership over 600 the majority of whom are nurse case managers.

The second step was recruiting and inviting nurse case managers to participate. The beginning portion of this step was a written request with the pertinent information and request for inclusion in the CMSNE newsletter sent to the CMSNE office at the end of May 2012. The request included a description of the survey, outline of the purpose of the survey, the researcher's credentials, and instructions for participating. After the CMSNE board of directors gave approval, the first invitation was prepared and submitted to the CMSNE newsletter editor. The invitation and the reminder notice can be viewed in Appendices G and H. The monthly newsletter, distributed via email and postal mail service, contains upcoming events, program announcements, and news regarding CMSNE initiatives and activities. The invitation to participate was to be published in the June newsletter; this connected the research project with activities of CMSNE and identified this researcher as a fellow member.

Unfortunately, the June newsletter was delayed so it was not distributed until the first week of July, before the July Fourth holiday weekend. The invitation was republished in the newsletter the end of August. It was anticipated that the reception of a survey about their practice would have been well received; however, there were only eight online responses. The delay of the newsletter to July likely meant it arrived during summer vacations when case managers were away or doing extra work covering the work of fellow case managers who were on vacation. Even the second newsletter occurred during a typically busy time of year for many people.

Because of the low response, a second recruitment strategy was initiated. At the annual fall convention of the CMSNE, members were invited to participate by using the online survey or completing a hard copy of the survey. First the survey and invitation were included with the other printed convention materials. Second this researcher was able to make a personal, verbal invitation during the business meeting. Lastly there were opportunities for conversations with attendees of the annual meeting and invite them to complete the survey. The survey was collected by the organization to maintain the anonymity of the participants. At the registration desk there was ballot box clearly labeled for the surveys to be deposited. At the end of the convention, the executive director of the CMSNE packaged and mailed the hard copy surveys to this researcher. At this point in time, four online submissions and 34 paper versions of the survey were collected. The final invitation was made the beginning of December via the e-newsletter; the data collection period was closed January 14, 2013. There were a total of 61 responses from case managers, 34 paper surveys and 27 online surveys.

Data Collection Schedule

The data was collected throughout the time the survey was active. At the end of the survey period, the responses were downloaded and imported to Microsoft Excel®. The online survey was open for seven months from the date of the first email and mailing of notice from CMSNE in June until January 14, 2013.

Questionnaire

Previous research on nursing languages has relied primarily on medical records and other documentation to capture data. Unfortunately, the nurse case managers do not work in a single setting using single documentation system so it would be difficult

if not impossible to review records created by the nurse case managers. Therefore, the questionnaire was designed so the nurse case managers would generate the data by written responses to a case study. The few case studies used in previous research were about individual clients and not larger populations. Thus, it was necessary to create a case study or use a case study from another source. A case study was located in book by Fairbanks and Candelaria (1998); a case study about diabetes mellitus was adapted for the questionnaire. Diabetes mellitus is a chronic disease that is very common in adults in the United States. According to the Center of Disease Control (2012), 25.8 million Americans (11.3%) have diabetes. It is the 7th leading cause of death; the estimates from studies are that diabetes is implicated in 35%-40% of deaths. The high prevalence of the disease makes it a disease likely to be encountered by nurse case managers. The case study was about members of an insurance company who have been identified as having diabetes mellitus; the nurse case manager was asked to plan and implement an educational program for this population group. This meant that the survey elicited language for only one disease but it was a beginning effort and informs future work on identifying and developing nursing language for other diseases and health problems. At the end of May, the questionnaire with the case study was piloted with small group of five nurse case managers working in Rhode Island and who were not part of the sample. The questionnaire and case study generated relevant responses and the nurse case managers did not have suggestions for improvement.

The questionnaire has two sections. The first section captured basic demographic information about the nurse case managers profession, age, sex, race/ethnicity, education preparation, years of experience as nurse case manager, years of experience

as nurse case manager in community, job title, and work setting. The basic information was used to verify that the participant met the definition of the sample population and also to compare to other nurse case management populations to determine if the sample is representative of nurse case management workforce.

The second portion of the survey consisted of open-ended questions involving the case study describing a caseload of clients with diabetes mellitus. Nurse case managers were asked to prioritize and categorize the subpopulations in the case study caseload. The questions were designed to elicit the natural language of the nurse case managers specifying how they labeled the subpopulations in the caseload by first asking them to categorize the groups they would expect in the caseload. Subsequent questions provided additional data to help coding of the labels used for the subpopulations by considering the factors they used to identify the groups, strategies for the caseload, and the related factors in choosing the strategies. Based on the experience of the five nurse case managers who tested the questionnaire, it took between 20 to 30 minutes to complete. The questionnaire can be found in Appendix I

Data Analysis

The analysis has two components. The first component was tabulation of the demographic information describing the participants then the results were compared to the case manager demographics in a study of certified case managers by Park and Huber (2009). The second component was a continuous process of extracting identifiers and names followed by searching for relationships that were continually changed as the data were analyzed. There were multiple steps in this process. Spradley's (1979) taxonomic analysis techniques were the framework for the process.

It should be noted that the taxonomic analysis by Spradley includes a set of additional steps to formulate structural questions that are used to verify the taxonomic relationship and to elicit new terms. The last step is conducting interviews using the structural questions. This step was not performed in this study. It would be conducted in future research.

The first step was to read all the responses to each of the questions without taking notes. The responses were read then a second time; during the second reading, first impressions of identifiers and names were recorded. The next step was extracting identifiers and names from the responses to the first research question about describing subpopulations. This process was repeated for each of the remaining questions. For the second research question about data elements used in assessment, names and identifiers were identified. The identifiers and names of the interventions came from the review of the responses to the third questions. Responses to the last question about outcomes were read for the identifiers and names related to outcomes.

The last step was to read the responses from all the research questions extracting additional identifiers and names for each of the four research questions. The responses were read a second and third time to exhaust the extraction process. The result was a list of terms extracted from the responses.

An initial set of categories for each question was identified so as to focus the analysis. The initial set of categories came from first impressions of the early reading of the responses. They were as follows: more or less services, frequency, utilization, cost, satisfaction, adherence, willingness, age, disease, high-med-low risk, physician, diagnostic codes telephone, visits, mailings, social support, education, worker, and

geography. For each of the categories, responses from all the questions were reviewed and a determination made if the response fit the category. The question asked for each term was “ is this term a kind of category?” For example was “high cost” a kind of “high risk”. This process was repeated multiple times. When a term did not fit into a category, a new category was created. When the meaning of the term was not clear, the responses from all the questions given by that participant were reviewed to establish a meaning. Any term that could not be clearly identified was set aside. Also eliminated were data elements such as “case management” because it referred to the subject that was being studied; it was considered too broad. The extraction of terms from the responses to the questionnaire was considered exhausted once all the terms were categorized. At that point, there was a single set of categories for each of the questions; each single set of categories was then searched for subsets. With each review, categories were collapsed into smaller numbers of categories. Next the categories were sorted according to the research questions related to subpopulations, assessment, intervention and outcomes. A second researcher examined the responses and reviewed this categorization independently. Both researchers discussed their findings and consensus was reached.

As part of the analysis process, the data was displayed in a network, nodal format i.e. a folk taxonomy (Spradley, 1979). Folk taxonomy is the organization of the “folk” terms used by the subjects under investigation into a representation that provides a clear picture of the semantic relationships among the all the folk terms. The folk taxonomy for this study provided a hierarchical tree diagram to show the different terms and their relationship to each other. The taxonomy revealed the different levels

within a category. Although the taxonomy is not an exhaustive list of terms used by nurse case managers, it explained the meaning of terms and illustrated the organization of the terms.

Qualitative Analysis

As with any research, the validity and credibility of the research is needed. Qualitative research involves evaluation of criteria for qualitative research. (Lincoln and Guba, 1985) First is credibility i.e. the truthfulness of the data. The nature of a questionnaire meant limited engagement with the participants, which is a threat to credibility; as a counter to this threat, an independent researcher analyzed the results plus the results were also reviewed with the five case managers who reviewed the questionnaire. The tables and the diagrams of the terms from the study were shared at a lunch meeting with the five case managers. Specifically, the case managers were asked if the tables and diagrams were consistent with of their understanding of case management. Additionally, they were asked about the handling of the “risk” term. Their comments confirmed the interpretation of the results. Second is fittingness or the degree to which the interpretation and explanations fit the data. The responses from the questions were used for labeling categories and subcategories in the tables to present analysis of the data. As mentioned earlier, there was difficulty in determining inclusion and exclusion of terms into the different categories. The third criterion is auditability. The description and tables of the method, analysis, and inclusion of the actual responses attempt to make the research auditable.

CHAPTER FOUR

RESULTS

The results are presented in seven sections. The first two sections are related to the response to the survey and the demographic information. Each research question is in a separate section followed by a display of taxonomy for population, interventions and outcomes.

Survey Response

As indicated earlier in the methodology chapter, the goal was to collect responses from 100 nurse case managers who were members of CMSNE; this would have been approximately a 25% response rate. Also as described earlier, the data collection was designed to be an online questionnaire only; however, because of the low return rate, the data collection included paper questionnaires that were distributed to case managers attending the CMSNE Annual Fall Meeting. As a result, the sample included nurse case managers who completed an online or paper questionnaire.

The response to the invitation was lower than the 100 responses. The number of surveys returned totaled 61, and of the 61 surveys, only 43 of the surveys were even partially completed. Eighteen (18) of the paper surveys were returned blank. After review of the 43 completed surveys only 21 contained responses to the questions about the case study; the other 22 surveys had only demographic information with either no answers or incomplete answers to questions about the case study. Two (2) of the 21 were eliminated because the respondents indicated they were not registered nurses. Therefore the total number in the sample was 19 or less than 5% of the estimated 400 nurse case members of CMSNE. Although there were only 19 complete surveys from

nurse case managers, they had remarkably similar answers to the questions about the case study. It was determined that saturation had been reached despite the lower than planned numbers. The 19 completed surveys yielded 122 unduplicated items coming from the original 179 answers.

Demographic Information

The sample for the study was nurse case managers who are members of CMSNE, which is the largest chapter of the professional organization of Case Management Society of America. CMSA with a membership of over 11,000 case managers (CMSA, 2013), represents about a third of the 30,000 certified case managers across the United States (CCMC, 2013). CMSNE had over 600 members who live and work in Maine, Vermont, New Hampshire, Massachusetts, and Rhode Island; the executive director of CMSNE estimates that about 400 members are registered nurses.

All of the nurse case managers were female between the ages of 40 to over 60; the majority ages of 50-59 years of age. The average years of experience was 17.8 years with the range from 1 year to over 16 years. Ten (10) of the 19 case managers had over 16 years of experience. One nurse case manager had an associate's degree, the 16 were baccalaureate prepared nurses, and two nurses had master's degree. Nurse case managers worked in community-based organizations except for eight of the nurse case managers who worked in a hospital or a nursing home. Nonetheless these eight remained in the sample because they had previous case management experience in settings outside the hospital and nursing home.

These demographics differ from the demographics of case managers certified by Commission for Case Management Certification (CCMC) described in an article by

Park and Huber (2009); the demographics are displayed Appendix J. There were several differences worth noting. First the years of experience, the majority of the study sample had 16 years or more of experiences versus the more evenly distributed experience by the sample in the article. The educational level of the study sample was equally divided between those with baccalaureate degrees and masters degrees with the exception of one associates degree; the sample in the article approximately half were baccalaureate prepared case managers but the remainder were distributed among case managers with associates degree, diploma, and masters degree. Another significant difference is the sample in the article had a much higher number of independently practicing case managers.

Also one of the questions in the demographic section was about software programs used by the nurse case managers. The type of software fell into 2 groups: those related to case management and those related to an EHR. Table 3 lists the software programs.

Table 3
List of Software Used by Nurse Case Managers Sorted by Type

Case Management	EHR
<ul style="list-style-type: none"> • eTums • Rumba • PBM software system (Pharmacy) • BH software system • TCS Acuity • Care Radius • Paragon • Patcom • Critview (MCAP) • Intebgral • Seriam • Click4Care (2) • Matric • Cradlerx (HHC) 	<ul style="list-style-type: none"> • McKesson • CPSI • Meditech • Eclinicalworks (3) • AllScript (2) • EPIC • Midas • Paragon • Health Rules by Vitera • Eclipse • Cerner • Chartlink

Note: Numbers in parenthesis are the number of responses for the product. All are one unless specified differently.

Responses and Terms

All responses from the questionnaire were reviewed; the terms were extracted and sorted into categories and subcategories. A complete listing of the responses is listed in Appendix K and the terms extracted for each of the research questions are in Appendix L. As described in Chapter 3 every response was considered for each of the four research questions for all possibilities and potential usefulness of each term for each of the research questions. Nurse case managers, particularly in community settings such as insurance companies, manage the utilization of services so utilization was the first category to be analyzed. All responses from the first question were reviewed to determine if they could be categorized as part of utilization. Next, the responses for each of the other three questions were conducted. During this process, other categories were identified.

The first list of categories were utilization, hospitalization, emergency room, labs, scripts, office visits, home care, services, service providers, medications, education, coordination, support, coach, when diagnosed, physical characteristics, satisfaction, motivation, location, work, social, school, formal education, collaboration, complexity of disease, complications, co-morbidities, and claims. After refinement, the categories were utilization, cost, disease-related, treatment-related, people factors, living factors, education, support/coach, care coordination, and type of interaction. The terms sorted into categories and subcategories are in the following appendices: Appendix M utilization, Appendix N cost, Appendix O disease related, Appendix P treatment related, and Appendix Q people factors.

Research Question 1 Subpopulations

The first question related to the case study in the questionnaire was what descriptors and names do nurse case managers use to refer to subpopulations. The categories, subcategories, and terms identified for the first question are discussed describing the terms and collapsing into categories. The Table 4, at the end of this section, contains the categories discussed below.

Utilization Category

Utilization was defined as the amount of service. The first review yielded only three terms: claims data, intensity of service, and gap in services. The review of the answers for each of the other three questions added to the list of terms that fit into the category of utilization. Initially all the terms were grouped into subcategories of utilization, hospitalization, emergency room, labs, scripts, office visits, home care, services, and gaps or missing services. These were collapsed into the terms listed in table. The terms of office visits, home care and services were combined into a single subcategory of provider type.

Cost Category

Initially the terms of high cost and money spent were included in utilization. On further review, cost was determined not to be about the amount of service but the money spent for services. Nurse case managers are often responsible for activities to control the cost of services. Even though utilization and cost are related they were separated. Using the definition of money spent on services yielded four terms: total money spent, high cost, med cost, and low cost.

Disease-Related

Disease-related category contained terms that were about the disease process. For question one, there were only a few terms; A1C was the most commonly identified term. Nurse case managers identified glucose results and A1C levels to name and group populations. Review of other questions added to this category, which is discussed later. See Appendix O for the terms associated with questions one.

Treatment-Related

In the treatment related category there were several categories, all of which were about the treatments of the disease. Categories were compliant, service provider, place of treatment, and type of treatment group. Appendix P contains the terms related to the question one.

People Factors

Responses to question one yielded the categories of physical characteristics such as age, experience with the disease, and motivation. The categories of question one expanded with the review of the other questions, which is in subsequent paragraphs.

Living Factors

Under living factors the terms of retired, active, lost time injured or medical only injured workers fit into a category labeled living factors i.e. things about the social aspect of people. Income and terms related to location or geography were also identified in the response to question one.

Terms Not Used from Question One

There were several terms not used from the list of responses for question one. The terms were highest need, moderate need, minimal need, risk stratification, hi-risk,

need risk, low risk, high risk, mass health rating system, and level of intensity. First, the impression that risk would be a good subcategory, especially because of the number of risk type terms; however, it quickly became problematic. When trying to fit other terms into this subcategory either everything would fit into the risk subcategory or none of the terms would fit. It was unclear what was the object of the risk. For example one participant’s response was “suggest separation by risk level highest being those who have had a hospital admission or ED visit in previous 12 months” which relates risk to utilization. Another participant wrote “high risk: multiple co-morbidities” so it appeared from this nurse, risk is related to clients’ health or disease. The conflicting definition of risk resulted in the risk category being eliminated.

Table 4
Categories and Subcategories for Question 1

Utilization	Costs	Disease Related	Treatment Related	People Factors	Living Factors
Provider Type: office visits, home care, services High Utilizers Scripts or Pharmacy Requiring more hospitalization Gaps or Missing care	Medical Costs High Cost (2) Low Cost Medium Cost Total dollars spent	A1C (6) Diagnostic Type of Dx: ID vs NID, Active DM vs pre diabetic	Compliant Level of Intensity Service Provider Type of Groups: Prevention group, treatment group Place: home care, out-patient, in-patient	Age (6): adult, pediatric Motivation: motivated, willing to change Experience with Dx: new, novice, expert with dx (2) Recentness of service	Income Isolated/Elders Geography: kids's school Neighborhood Address, phone Retired, family, member (insurance) Worker: lost time injury-medical only injury) Active

Research Question 2 Assessment

The second research questions asked about data elements used by nurse case managers in assessing and assigning clients to subpopulations. Results of the five categories are described below. Table 5 lists the categories, subcategories, and terms identified at the end of this section.

Utilization Category

The responses to question two generated many terms in all the same subcategories identified in question one. Hospitalization expanded to include utilization hospitalization, dates of hospitalization, and claims in-patient; terms related to reason for hospitalization were hospitalization for related symptoms, ICD, and DRG. The subcategory of emergency was identified for the terms of utilization of ER, claims for ED, and dates of ED visits. Scripts subcategory contained claims pharmacy. The last subcategory of service provider; terms associated with the subcategory are dates of MD office visits, number office visits last year, utilization to treatment of disease, locating level of utilizers of services, services received, and claims outpatient. The last term was gap reports.

Cost Category

There were only a few terms found in the responses to question two, however, all were subsumed into or collapsed into category of utilization; they fit definition of utilization.

Disease-Related Category

This category had many terms fitting the definition of being about the disease. The first subcategory was labeled the complexity of the disease. This subcategory was

about intensity of the disease, years of disease, and type of DM. The terms complications of disease remained a separate subcategory of complications. The subcategory of co-morbidities included terms indicating multiple morbidities, other disease codes, and diagnoses problem list.

Treatment-Related Category

Like with the other categories there was additional terms added to the categories identified in question one. The majority of the terms from the responses to question two were related to service provider, which included terms provider type and type of service needed. Originally service was separate from physician providers but then decided to collapse into one subcategory. There was one additional subcategory of medications.

People Factors Category

The people factors category are terms that are about a person or individual. Under the subcategory physical characteristics are weights, gender, and race were added to physical characteristics. The term “newness of diagnoses” was placed in the experience with the disease subcategory and formal education remained a separate subcategory. The responses about client satisfaction, compliance, and follow up were related to question four about outcomes but recorded as a subcategory under people factors.

Living Factors Category

Originally during the coding process, the terms about work, family, geography, etc. were placed as people factors. Further analysis it was determined the terms, although related to people, were more about the social factors such as work, family,

income and location. These were collapsed into one subcategory named living factors to capture the multiple terms. Table 5 lists the categories with corresponding terms.

Table 5
Categories and Subcategories for Question 2

Utilization	Costs	Disease Related	Treatment Related	People Factors	Living Factors
Admission dates & history (2) Dadas of MD visits (2) Locating level of utilizer of services Utilization of dx at home ICD (2) Gap Reports	Admission dates Claims data - inpt, ED, pharmacy, outpt visits, gap reports ER visits & dates Cost (3) Costs of dx at home	Lab values: A1C(6), glucose) Acute or Chronic Episodes Years of Dx Comorbidities : DRGs, Problem List Complications Type of Dx: ID vs NID, new onset, Pre-Dx factors. Intensity of disease: Inpt vs outpt tx patterns Meds Disease Related Groups S&S (2)	Client Satisfaction Compliant with followup & lab Ever given information about illness Evaluation of nutritional eval Services: home tx, pharmacy, Physicians, Has PCP, Services rendered (eye exams) Type of services needed Tx Codes (3)	Age (6) Weights Race Gender	Family Formal education (2) Geography Insurance Working or not Impact of work or living level

Research Question 3 Intervention

The intervention research question was identifying descriptors and identifiers nurse case managers use to refer to interventions. The first impression of the responses was that the terms would all be about education and coordination, however, upon further review there were more diversity of responses. Analysis of the responses generated four categories of education, support/coach, care coordination, and type of

interaction. Table 6 lists the categories, subcategories, and terms identified at the end of this section.

Utilization Category

There were no terms identified from this question that met the definition about the amount of services.

Cost Category

As with the utilization category there were no responses that fit the definition pertaining the cost of services.

Disease-Related Category

It was surprising that there were not responses from question three that were about the disease. These were expected.

Treatment-Related Category

Initially, the many responses to question three were placed in treatment-related category because they seemed to be about the treatment of the disease. The interventions identified by the nurse case managers did not fit exclusively into treatment-related or disease-related category; often they fit into both categories. In the end, the terms were classified into separate categories.

People Factors and Living Factors Categories

There were no responses from question three categorized as people factors or living factors.

Education Category

The largest number of responses was education for the individual clients or groups. There were many terms that fit into client education and develop/redesign educational materials. Appendix P has the listing of the terms.

Support/Coach Category

The other category was support/coach. Again, many terms identified as interventions that supported the clients' managing their diabetes. For example, interventions of peer-to-peer outreach or training others such as hairdressers and shelter workers provided support and encouragement for the clients. Interestingly, there was no response that related to medication.

Care Coordination Category

Care coordination category had terms labeled as care coordination, follow-up, and interface with providers. All the terms were related to interventions that involved the nurse case managers organizing and facilitating services.

Type of Interactions Category

The last category was type of interaction. This category differentiates the method of interacting from what is being communicated. For example, one response linked that a client identified at low risk would receive a mailing as opposed to the client with higher risk that warranted a phone call. The headings for this subcategory were mail, telephone, face to face, and texting.

Terms Not Used for Question Three

Lastly there were several items that did not fit into any of the categories. First "CM assessment and intervention" and "diabetic CM services" were global terms for

the work of case management and not specific interventions. Thus they were eliminated. Also in the comment section the response “nursing resource availability” was considered an issue related to workforce availability and not directly related to any of the categories.

Table 6
Categories and Subcategories for Question 3

Education	Care Coordination	Support/Coach	Type of Interactions
Develop educational materials - new, novice, expert	Care coordination	Encourage PCP visits	Phone calls (3): Telephonic support, telephonic workers, weekly-monthly calls Mailing materials (2): mailing info, educational Face to Face (2): visits Texting
Redesign education	CM Follow-up in PCP, Home, Hospital	Health coach-type resources	
Education - symptom, care, treatments, footcare, diet	Interface with VNA/PM RNs	Individual or group educational sessions	
Education - baseline assessment	Meet with patient at doctors office	Social supports	
Enroll into short intervention classes	Referral - home care for individual plan, educators, nutritionist	Train hairdressers, workers, shelter workers for outreach	
Nutritional assessment		Peer to peer outreach	

Note: Only categories that contained terms were included in the table. Other categories not shown.

Research Question 4 Outcomes

The last set of categories and subcategories came from the research question about outcomes. Question 4 generated many responses, which are described below. Table 7, located at the end of the section, displays the categories, subcategories, and terms.

Utilization Category

The utilization category had a term for each of the subcategories. Hospitalization was decrease hospital claims; emergency room was decrease ED claims; scripts was increase filling of scripts; service provider was increase PCP visit; and gaps or missing services was decrease gaps in care – go to appointments.

Cost-Category

The cost subcategory of money spent had the corresponding question four term of less total money spent.

Disease-Related Category

There were not terms from question four that was connected to disease related category.

Treatment-Related Category

The responses from the outcome question were under the service provider subcategory; they were regular visits, follow the plan, and follow through with plan.

People Factors Category

Many of the responses about outcomes were associated with the people factors category; they were organized into subcategories of motivation, satisfaction, collaboration, and compliance. The terms about responsiveness, willingness and openness were concerned with people's motivation thus categorized as motivation subcategory. The subcategory of collaboration included terms about cooperation and use of the case manager as a resource. Lastly, there were a few terms identifying clients' satisfaction with services and that clients comply with the prescribed treatments and advise of service providers.

Living Factors Category

Although there were a variety of subcategories for living factors category in previous questions, the only responses specific to the question about outcomes were about returning to work and clients achieving self-care.

Table 7
Categories and Subcategories for Question 4

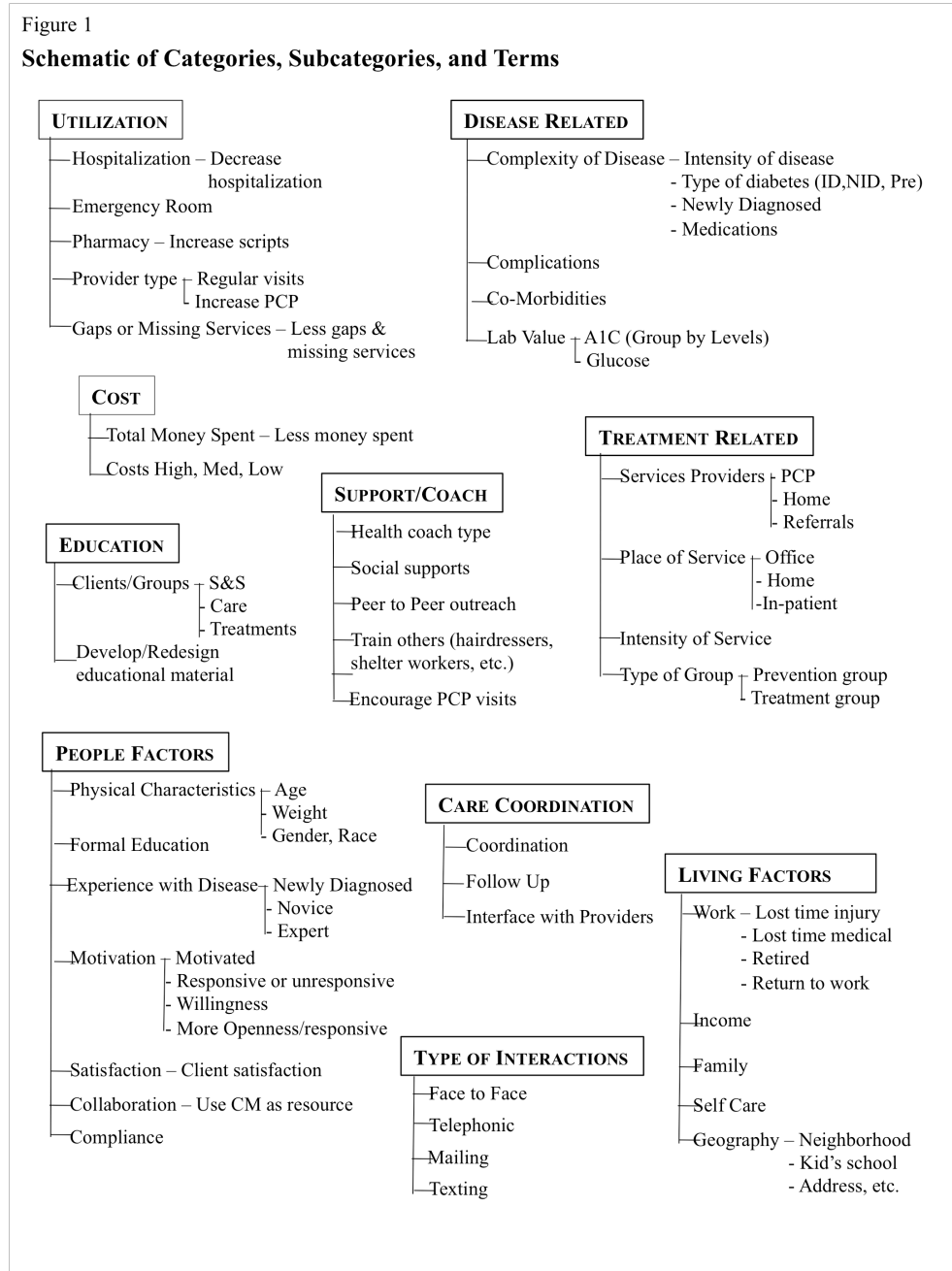
Education	Care Coordination	Support/Coach	Type of Interactions
Develop educational materials - new, novice, expert	Care coordination	Encourage PCP visits	Phone calls (3): Telephonic support, telephonic workers, weekly-monthly calls
Redesign education	CM Follow-up in PCP, Home, Hospital	Health coach-type resources	
Education - symptom, care, treatments, footcare, diet	Interface with VNA/PM RNs	Individual or group educational sessions	Mailing materials (2): mailing info, educational
Education - baseline assessment	Meet with patient at doctors office	Social supports	Face to Face (2): visits
Enroll into short intervention classes	Referral - home care for individual plan, educators, nutritionist	Train hairdressers, workers, shelter workers for outreach	Texting
Nutritional assessment		Peer to peer outreach	

Taxonomy of Subpopulation, Assessment, Interventions, Outcomes

As described in the beginning of this chapter, the categories and subcategories were developed through the process of reviewing the responses of each question separately and then by reviewing the other questions for responses that may have applied to the question. Utilization was the first term reviewed which ultimately led to the five categories of utilization, cost, disease related, treatment related, and people factors. All the terms for each of the categories were organized into smaller subcategories, which in turn were grouped into headings. The organization of the terms in this manner became the elements in a folk taxonomy.

According to Spradley, a folk taxonomy is the organization of the “folk” terms used by the subjects under investigation into a representation that provides a clear picture of the semantic relationships among all the folk terms. The folk taxonomy is a method to display the terms used by the nurse case managers into a single form. Therefore it is not a display organized by the research questions, however, a display

organized around the terms and categories. In Figure 1, the folk taxonomy from this study is displayed.



Practicing Case Managers

After the tentative folk taxonomy was created, the 5 practicing case managers who piloted the survey reviewed the folk taxonomy. They did not have any changes to the categories; all commented on how surprised they were to see something about what they actually do at work. There was a short discussion about the term “risk”. They reported not ever thinking about it, only that they generally sorted people into different categories of risk; four of the case managers stated risk was more of a measurement.

Summary

The extraction of the many terms from the responses to the questionnaire became the base for the analysis. The terms were organized into categories, subcategories, and headings that were assembled into tables and finally displayed as a tentative folk taxonomy. The folk taxonomy documented and displayed the natural, written language used by nurse case managers. This represented a first step that identified population based nursing language used by nurses whose practice includes population-based nursing care.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

In this chapter the results of the research questions are discussed. This discussion is followed by the implications of the study for nursing practice, education and research. It ends with limitations and conclusions.

Discussion

Research Question 1 Subpopulations

The responses to the research question for subpopulations generated many terms that contributed to each of the categories in the tentative taxonomy. A term not used, but commonly identified by nurse case managers, was risk. Unfortunately, there were difficulties clearly defining risk as a category; risk had different levels i.e. low, medium and high but it was not clear what was the object of the risk. The nurse case managers' responses indicated the object of the risk was cost, risk of medical need, or risk for utilization. The terms appear to be more modifiers of terms in other categories. Also based on review of the response, it appeared the nurse case managers were concerned with managing risk, which is consistent with the primary function of the jobs of nurse case managers. This is a clear difference from the description of nurses found in the literature where their work about dealing with the disease and risk of injury was a secondary. For the nurse case managers the primary goal was managing the risk. The terms high, moderate, and low risks were very common; high cost, less spending, high risk medical and risk stratification were other examples. Since one of the goals was managing the risk it was not surprising that the outcomes measured the risk by counting utilization, costs, and effectiveness of treatments.

Another consideration is that the categories and subcategories extracted do not represent an exhaustive list of subpopulations. These categories may be satisfactory for the disease of diabetes; however, other diseases may generate a different set of categories and subcategories. The articles in the relevant literature included other diseases such as cardiac, HIV, and others. These diseases may not fit as neatly into a category of complexity or type of disease.

Another question is whether any of the categories and subcategories might be represented by any of the ANA recognized nursing languages. First consider Omaha System, which has a domain named case management; it is possible that terms and categories could fit into this domain. It would, however, have to be investigated further to determine the fit. There is not an obvious connection with other languages. The other languages have domains where the categories and subcategories may fit, however, it could require significant adaptations. NANDA-I, which captures nursing diagnoses, had domains of health promotion and life principles, which may yield terminology for population based care. CCC has self-care, life cycle, and medication that may capture the terms and categories. Also potentially useful are the domains of family, community and family health and community health found in NIC and NOC. All would require further investigation and none of the terms and categories may fit.

Not found in either the literature or the nursing languages were terms related to utilization and costs. For nurse case managers, utilization and costs were a key concern of their approach to the subpopulation with diabetes.

Research Question 2 Assessment

As might be expected, categories and subcategories fit into similar categories as with the research question one about subpopulations. Data elements used in the assessment process by nurse case managers would fit into the subpopulations because the subpopulations reflect the work of the nurse case managers. The data elements were very similar to the assessment elements in the literature like complications and co-morbidities.

Research Questions 3 Interventions

The subcategories for the third research question were little different than the categories of the subpopulations and assessment. Interventions are activities that direct services to change or amend a problem based on assessment data elements; this perspective would likely lead to different categories. Many more terms were extracted for the categories for care coordination, support/coach, and client education. Care coordination was anticipated since care coordination and collaboration are part of the definition of case management (CMSA, 2011). Client education was also not unexpected since that is a commonly used intervention for knowledge deficit by clients.

Worth noting was the subcategory of type of interaction. In most areas of nursing practice, telephone calls, mailing materials, face-to-face, and texting interactions are methods of communicating with clients. Nurse case managers, however, identified these methods as the interventions. This subcategory reflects the approach in population-based nursing care, as identified in public health nursing textbooks and competencies, where educational campaigns are standard interventions. Thus the type

of interactions should appropriately be considered interventions. Neither the articles in the literature nor the nursing languages appear to include type of interactions as an interventions.

Another interesting finding was the absence of interventions under the disease related category. The nurse case managers' interventions were directed to encouraging and facilitating the treatment for the disease but not the disease itself. One would have to ask if this is unique to diabetes or if this would hold true with other diseases, injuries, or health problems.

Research Question 4 Outcomes

The terms extracted from this research question fit into all categories except for the disease related category. It was not surprising that the outcomes fit four of the five categories because the nurse case managers were writing responses that measured the changes in the subpopulations and effectiveness of the interventions. The terms identified were predominately in the category of people factors. Terms indicated changes in responsiveness, receptivity, appreciation, collaboration and motivation; also identified were possible resistance factors that would interfere with making changes by clients. Based on the larger numbers in this category, one could argue that nurse case managers judged people factors as more important than the categories of utilization and cost, which are part of the business goals of the companies where nurse case managers work. Business goals may be viewed as a consequence of meeting the other outcomes.

The articles in the literature did not identify outcomes specifically as opposed to the nursing languages that included outcomes in many of the domains in their

classification. In fact NOC is a terminology for nursing outcomes; Omaha System has a domain named outcomes and CCC integrates outcomes in the different domains. Having a terminology or domains dedicated to outcomes increases the chance that the terms and categories from the fourth research questions may fit into the nursing languages.

Implication for Practice

Practice Domain

Kim's (2010) practice domain is framed by a set of philosophies, dimensions and processes. At the core are the processes of deliberation and enactment, which are supported by or operate within the context of the philosophies and dimensions. The processes of deliberation and enactment represent complex processes that are further conceptualized with aspects of the nurse and the client plus nursing goals and nursing means. The thinking of the nurse and actions taken are connected to each other and to the results or outcomes, which then in turn informs the thinking of the nurse. Nursing languages are a visible manifestation of these processes. In the deliberation process, the interaction of the aspects of the nurse and client, nursing goals, and nursing means lead to selection of the diagnosis and interventions. The selection is then documented on paper and more commonly into a computerized documentation system. The documentation is part of the enactment during which the nurse records his/her decisions and actions.

The folk taxonomy contributes to the practice domain by identifying and labeling phenomena related to population-based nursing practice but equally important it highlighted how nursing goals affect the naming and labeling of the phenomena. This

became apparent with the evaluation to not include the term “risk” in the folk taxonomy. For nurse case managers one of the goals or outcomes of their work is managing the risk for utilization and costs of services. Managing the risk for utilization and costs of services is a business or healthcare industry perspective about improving the use of healthcare services so terminology included terms about amount of services used and how much money spent. Additionally, nurse case managers coordinate activities to manage the risk related to the disease, treatments, and people factors. From the perspective of the recipients of the case management services, case management is about improving the willingness and abilities of clients. Although the cadre of interventions to manage risk of complications for clients and interventions to manage utilization of services may be similar, the rationale for the interventions chosen is related to the goal established by the nurse case managers.

Another indication of the effect of the goal of the nurse on the work is the comparison with nursing languages. The nurse case managers manage the risk of the utilization and cost of services and focus on groups of people; whereas the inferred goal of the nursing languages is to assess, intervene, and evaluate care provided to individual clients. This, again, points out the importance of the goal of the nurse in the deliberation process.

Practice of Case Management

This study contributes to understanding the practice of case management because the folk taxonomy provides terms that reflect the work performed by nurse case managers. The limited research about nursing languages and case management points to the need for investigating language for case managers. Although the *CMSA*

Standards of Practice (2010) list many actions and activities with each of the first seven standards, the process outlined in the standards are directed toward individual clients and not necessarily population-based care. Many of the terms from this study match the actions and activities listed in the standards of practice but again it is comparing individual focus to population focus. Despite the match of the terms, it should be noted that the standards are organized as standards for the process of case management; the folk taxonomy represents language used by case managers and not the process. Appendix R has the first seven of the CMSA standards about the case management process.

Lastly, the categories and subcategories of the folk taxonomy bring to the practice additional terms to be used by nurse case managers i.e. it adds to the population-based nursing language. This contributes to the practice by more clearly articulating the population-based work and outcomes of the work by nurse case managers. New language will ultimately be included in future software programs designed for case management.

Implications for Research

Research is the structured, diligent investigation or experimentation of nursing phenomena; the explanation and interpretation of the findings from research add to the knowledge of nursing. Nursing languages reflect and build on nursing knowledge in that developers of the nursing languages define the terms and phrases that represent concepts relevant to nursing practice. These concepts then are organized and structured into classifications, taxonomies, and data sets.

The folk taxonomy is only a beginning step in capturing the language for population-base nursing care; more research is needed to verify and expand the taxonomy. This study does, however, add to the knowledge of nursing. Area for further research is investigating different samples of nurses doing population-based nursing care and different diseases and/or problems. The nurses in this study were case managers working in insurance companies, private practice, and hospital-based programs. The results may be different for nurses in primarily rehabilitation settings, public health offices, or medical home corporations. The categories, subcategories, and terms may also be different for different diseases, for acute or chronic disease, for injuries as opposed to diseases, and for health promotion. This requires further research.

Another area for research is related to the ANA recognized nursing languages. Even though the five more commonly used nursing languages have the potential for capturing the work of population-based care, it may still be an adaptation. The nursing languages were developed and designed for care of individuals and not originally for populations or subpopulations. Therefore it would require careful inspection of how each diagnosis, intervention or outcome is defined and used in each of the nursing languages. With further studies, population-based categories, subcategories, and terms in the folk taxonomy can be refined. An expert for each of the languages could be employed to determine if the ANA recognized nursing languages capture the categories, subcategories, and terms in the folk taxonomy. Eventually these concepts could be submitted to one or several of the nursing languages organizations or groups

that monitor and edit the nursing languages; there are formal processes for submitting new languages.

The last area related to research is the use of the online questionnaire. The research in the literature used clinical records, narrative notes, and interviews and observations to obtain the raw data; however, this study used survey methodology. The choice to use a survey was unusual but provided a way to capture written data from a group of case managers since access to clinical notes and written narratives was prohibited by the proprietary nature of the businesses where case managers work. This would have been an insurmountable barrier to obtaining permission to review records.

The purpose was to capture written responses; however, case managers were quick to give verbal feedback as well. The researcher was present at the fall annual meeting of the CMSNE, the organization that was the source of the survey sample. During the convention many case managers completed the survey and also talked to the researcher directly about how they do their work and some of the issues they experience working with their computer systems. For example, comments like “it is nice to think about what I do in my work” or “I thought it was interesting to write down how I approach my cases” were common. Also, many comments were made about how there is not a place on their computer systems to put notes about their clients, further validating the need for nursing language to address this issue.

Implications for Education

The EHR is a part of the documentation system for almost all work settings hence the need to be familiar with and have the ability to use nursing languages. This underscores the importance of including nursing languages in nursing education

curriculum. Furthermore, the American Association of Colleges of Nursing (AACN) supports the inclusion of nursing languages in its the publication *Essentials of Baccalaureate for Nursing Practice*; Essential 4 in the AACN publication is informatics management and application of patient care technology. Prior to the adoption of the essential by AACN, the Technology Informatics Guiding Education Reform (TIGER) was an initiative with the expressed purpose of promoting health informatics technologies and reforming nursing education including the use of nursing languages. TIGER continues as a non-profit organization promoting reform in education.

Nursing care for populations is also part of nursing curricula and supported in the *Essentials of Baccalaureate for Nursing Practice* by AACN. This study brings to the forefront some of the activities and work of nurse case managers who work primarily in community settings and often have a focus on a group or population. This is useful even though the folk taxonomy is from only a small segment of population-based nursing, for only one disease, and from a limited number of clinical settings. The study also highlighted the work of managing utilization and cost, which is an important aspect of the healthcare business. As more of healthcare moves to the community, nursing languages that include diagnoses and interventions for healthcare in the community become essential.

Another implication for education is related to practicing nurses. A large part of nursing education takes place in the clinical area; the nurse in the clinical areas is seen as a teacher and works with the faculty working with the students. The closeness of the education and practice areas means that the success in teaching nursing languages

to nursing students is also dependent on the practicing nurses. In the study by Schwiran and Thede (2010) from 14% to 77% of nurses had no experience or awareness of nursing languages; the percentages were even smaller for nurses that indicated nursing languages were taught in school or used in clinical area. Education in the use nursing languages is important for nurses in practice.

Limitations

The tentative folk taxonomy is not an exhaustive list of terms that are part of the case management practice and population based nursing care thus the generalizability of the taxonomy is limited. Also the survey method restricted the ability to ask follow-up and questions to better understand the intent of the written responses. One of the difficulties of not having access to follow up information was assigning a term to a category and subcategory. The researcher had to infer meaning and make a judgment. Nonetheless it represents a beginning contribution to one aspect of nursing knowledge.

Another aspect of the study is that the case study used in the questionnaire was about diabetes mellitus. Although it is common disease in the United States and nurse case managers would be familiar with the disease, it is only one disease. The categories, subcategories, and terms may be different for different diseases, for acute or chronic disease, for injuries as opposed to diseases, and for health promotion. This requires further research.

An online questionnaire is a useful method to collect larger amounts of data easily, quickly, and inexpensively but one of the major concerns is with the response rate and quality of the responses. There are multiple methods to boost participation such as shorter length surveys, pre-notification of the survey, follow-up contacts, and

matching the salient issues with the people being surveyed. Two actions that were found to have the greatest impact on boosting participation in a survey were follow-up contact and surveying about a salient issue (Sheehan, 2001). Nurse case managers are presently very engaged in a variety of national legislative activities and working on projects to justify their importance in the changing health care system. The professional organization journal points to the need for research and using evidence based practices. Participation in a research project and completing a questionnaire is likely to be of interest if the nurses view it as supporting their practice and profession.

The length of the questionnaire also influences the response rate. The first part of the questionnaire consists of simple demographic questions that took five minutes to complete. The second part of the questionnaire moved to open-ended questions making the survey a 30-minute exercise. The length of the survey may have deterred some members from participating; however, given the current interest and focus on nurse case management practice, it may have counterbalance the length of time for the survey for some respondents. Lastly, using the computer to complete the online survey should not limit the response for members of the CMSNE because of the participants' ability and familiarity to use of computers in their work.

Another concern is the quality of the response or obtaining a representative sample. The invitation to complete the online survey was targeted to the professional organization of the nurse case managers to increase the likelihood the survey participants represent the population of interest. Of course, regardless of the effectiveness of the online questionnaire, a questionnaire limits the interpretations such as the effect of self-selection of participants, which weakens the ability for

prediction and generalizability. Since this an exploratory study, a survey still can be useful for a beginning understanding of the natural language of nurse case managers.

The last limitation is related to the comparison with ANA recognized nursing languages. The comparison involved only the major headings of the nursing languages. More detailed analysis may lead to differing results.

Conclusions

The study was designed to investigate language used by nurses doing population based care. Nurse case managers were identified as nurses whose clients include groups and subpopulations of people. A questionnaire was distributed in both online and written formats; 19 participants answered questions based on a case study about subscribers of an insurance company with diabetes mellitus. A tentative folk taxonomy was generated from responses to the questionnaire. Although the tentative folk taxonomy requires further investigation, it identified ten categories labeled utilization, cost, disease-related, treatment-related, people factors, living factors, education, support/coach/care coordination, and type of interactions. Thirty-nine subcategories were associated with the five categories and gave more specificity to the language in the categories. Further investigation of the folk taxonomy with different samples is needed to validate the categories and subcategories followed by additional research with different diseases and conditions.

APPENDIX A

ANA RECOGNITION CRITERIA FOR NURSING LANGUAGES

1. Support for nursing practice by providing clinically useful terminology (eg, nursing diagnoses, nursing interventions) and rationale for development.
2. A level of development beyond an application, adaptation, or synthesis of currently recognized American Nurses Association vocabulary/classification schemes or presents an explicit rationale for seeking recognition for synthesis, application, or adaptation of existing schemes.
3. Clear and unambiguous terms.
4. Documented testing of reliability, validity, and utility in practice.
5. A systematic method of development.
6. A named entity responsible for a formal process of documenting evolving development and maintenance, including tracking of deleted terms and version control.
7. A coding scheme that provides a unique identifier for each term.
8. Identify pertinent data elements as the variables of interest to whom and within what context.
9. Define the set of possible values for each variable.
10. Provide a clear description of a defined structure or architecture with explicit principles of division.
11. Contain terms that can be combined to represent more complex concepts.
12. Include a classification structure that supports multiple parents and multiple children as relevant.
13. Include pre-established rules for combining the terms.

Source: Coenen A, McNeil B, Bakken S, Bickford C, Warren J. (2001) Toward comparable nursing data: American nurses association criteria for data sets, classification systems, and nomenclatures. *Computers in Nursing* 19 (6), 240-246.

APPENDIX B

NANDA-I TAXONOMY II DOMAINS AND CLASSES

Domain	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Health Promotion	Health Awareness	Health Management				
Nutrition	Ingestion	Digestion	Absorption	Metabolism	Hydration	
Elimination/Exchange	Urinary Function	Gastrointestinal Function	Integumentary	Respiratory Function		
Activity/Rest	Sleep/Rest	Activity/Exercise	Energy Balance	Cardiovascular/Pulmonary Responses	Self Care	
Perception/Cognition	Attention	Orientation	Sensation/Perception	Cognition	Communication	
Self Perception	Self-Concept	Self Esteem	Body Image			
Role Relationship	Caregiving Roles	Family Relationship	Role Performance			
Sexuality	Sexual Identity	Sexual Function	Reproduction			
Life Principles	Values	Beliefs	Value/Belief/Action Congruence			
Safety/Protection	Infection	Physical Injury	Violence	Defense Processes	Environmental Hazards	Thermoregulation
Comfort	Physical Comfort	Environmental Comfort	Social Comfort			
Growth Development	Growth	Development				

Herdman TH. (2012) (Ed). NANDA international nursing diagnoses: definitions & classifications 2012-2014. 9th Edition. Oxford: Wiley Blackwell.

APPENDIX C

OMAHA SYSTEM

Omaha System Domains and Problem Classification Scheme

Environmental Domain: Material resources and physical surroundings both inside and outside the living area, neighborhood, and broader community.

Income

Sanitation

Residence

Neighborhood/workplace safety

Psychosocial Domain: Patterns of behavior, emotion, communication, relationships, and development.

Communication with community resources

Social contact

Role change

Interpersonal relationship

Spirituality

Grief

Mental health

Sexuality

Caretaking/parenting

Neglect

Abuse

Growth and development

Physiological Domain: Functions and processes that maintain life.

Hearing

Vision

Speech and language

Oral health

Cognition

Pain

Consciousness

Skin

Neuro-musculo-skeletal function

Respiration

Circulation

Digestion-hydration

Bowel function

Urinary function

Reproductive function

Pregnancy

Postpartum

Communicable/infectious condition

Health-related Behaviors Domain: Patterns of activity that maintain or promote wellness, promote recovery, and decrease the risk of disease.

Nutrition

Sleep and rest patterns

Physical activity

Personal care

Substance use

Family planning

Health care supervision

Medication regimen

Omaha System Intervention Scheme

Categories

Teaching, Guidance, and Counseling: Activities designed to provide information and materials, encourage action and responsibility for self-care and coping, and assist the individual/family/community to make decisions and solve problems.

Treatments and Procedures: Technical activities such as wound care, specimen collection, resistive exercises, and medication prescriptions that are designed to prevent, decrease, or alleviate signs and symptoms of the individual/family/community.

Case Management: Activities such as coordination, advocacy, and referral that facilitate service delivery, improve communication among health and human service providers, promote assertiveness, and guide the individual/family/community toward use of appropriate resources.

Surveillance: Activities such as detection, measurement, critical analysis, and monitoring intended to identify the individual/family/community's status in relation to a given condition or phenomenon.

Targets

anatomy/physiology
anger management
behavior modification
bladder care
bonding/attachment
bowel care
cardiac care
caretaking/parenting skills
cast care
communication
community outreach worker services
continuity of care
coping skills
day care/respite
dietary management
discipline
dressing change/wound care
durable medical equipment
education
employment
end-of-life care
environment
exercises
family planning care
feeding procedures
finances
gait training
genetics
growth/development care
home
homemaking/housekeeping
infection precautions
interaction
interpreter/translator services
laboratory findings
legal system
medical/dental care
medication action/side effects
medication administration/medication
coordination/ordering
medication prescription
medication set-up
mobility/transfers
nursing care
nutritionist care
occupational therapy care
ostomy care
other community resources
paraprofessional/aide care
personal hygiene
physical therapy care
positioning
recreational therapy care
relaxation/breathing techniques
respiratory care
respiratory therapy care
rest/sleep
safety
screening procedures
sickness/injury care
signs/symptoms-mental/emotional
signs/symptoms-physical
skin care
social work/counseling care
specimen collection
speech and language pathology care
spiritual care
stimulation/nurturance
stress management
substance use cessation
supplies
support group
support system
transportation
wellness
other

Concepts	1	2	3	4	5
Knowledge: Ability of the client to remember and interpret information	No knowledge	Minimal knowledge	Basic knowledge	Adequate knowledge	Superior knowledge
Behavior: Observable responses, actions, or activities of the client fitting the occasion or purpose	Not appropriate behavior	Rarely appropriate behavior	Inconsistently appropriate behavior	Usually appropriate behavior	Consistently appropriate behavior
Status: Condition of the client in relation to objective and subjective defining characteristics	Extreme signs/ symptoms	Severe signs/ symptoms	Moderate signs/ symptoms	Minimal signs/ symptoms	No signs/ symptoms

Omaha System Outcomes Scheme

APPENDIX D

NIC SAMPLE DIAGNOSIS

ELECTROLYTE MANAGEMENT 2000

Definition: Promotion of electrolyte balance and prevention of complications resulting from abnormal or undesired serum electrolyte levels

Activities:

- Monitor for abnormal serum electrolytes, as available
- Monitor for manifestations of electrolyte imbalance
- Maintain patent IV access Administer fluids, as prescribed, if appropriate
- Maintain accurate intake and output record
- Maintain intravenous solution containing electrolyte(s) at constant flow rate, as appropriate
- Administer supplemental electrolytes (e.g., oral, NG, and IV) as prescribed, if appropriate
- Consult physician on administration of electrolyte-sparing medications (e.g., spironolactone), as appropriate
- Administer electrolyte-binding or -excreting resins (e.g., Kayexalate) as prescribed, if appropriate
- Obtain ordered specimens for laboratory analysis of electrolyte levels (e.g., ABG, urine, and serum levels), as appropriate
- Monitor for loss of electrolyte-rich fluids (e.g., nasogastric suction, ileostomy drainage, diarrhea, wound drainage, and diaphoresis)
- Institute measures to control excessive electrolyte loss (e.g., by resting the gut, changing type of diuretic, or administering antipyretics), as appropriate
- Irrigate nasogastric tubes with normal saline
- Minimize the amount of ice chips or oral intake consumed by patients with gastric tubes connected to suction
- Provide diet appropriate for patient's electrolyte imbalance (e.g., potassium-rich, low-sodium, and low-carbohydrate foods)
- Instruct the patient and/or family on specific dietary modifications, as appropriate
- Provide a safe environment for the patient with neurological and/or neuromuscular manifestations of electrolyte imbalance
- Promote orientation
- Teach patient and family about the type, cause, and treatments for electrolyte imbalance, as appropriate
- Consult physician if signs and symptoms of fluid and/or electrolyte imbalance persist or worsen
- Monitor patient's response to prescribed electrolyte therapy
- Monitor for side effects of prescribed supplemental electrolytes (e.g., GI irritation)
- Monitor closely the serum potassium levels of patients taking digitalis and diuretics
- Place on cardiac monitor, as appropriate
- Treat cardiac arrhythmias, according to policy
- Prepare patient for dialysis (e.g., assist with catheter placement for dialysis), as appropriate

1st edition 1992; Revised 5th edition

APPENDIX E

NOC EXAMPLE OUTCOME

Hydration--0602

DEFINITION: Adequate water in the intracellular and extracellular compartments of the body

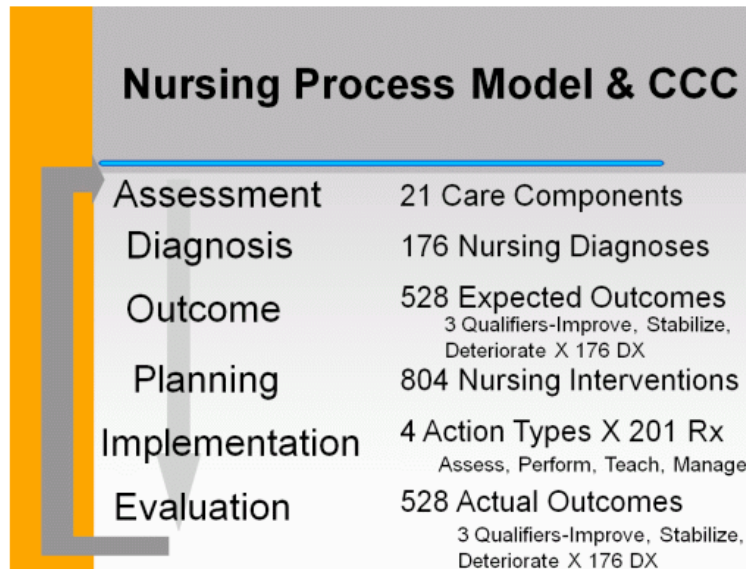
OUTCOME TARGET RATING: Maintain at _____ Increase to _____

	Severely compromised	Substantially compromised	Moderately compromised	Mildly compromised	Not compromised	
OUTCOME OVERALL RATING	1	2	3	4	5	
Indicators:						
060201 Skin turgor	1	2	3	4	5	NA
060202 Moist mucous membranes	1	2	3	4	5	NA
060215 Fluid intake	1	2	3	4	5	NA
060211 Urine output	1	2	3	4	5	NA
060216 Serum sodium	1	2	3	4	5	NA
060217 Tissue perfusion	1	2	3	4	5	NA
060218 Cognitive function	1	2	3	4	5	NA
	Severe	Substantial	Moderate	Mild	None	
060205 Thirst	1	2	3	4	5	NA
060219 Dark urine	1	2	3	4	5	NA
060208 Soft, sunken eyeballs	1	2	3	4	5	NA
060220 Sunken fontanel	1	2	3	4	5	NA
060212 Decreased blood pressure	1	2	3	4	5	NA
060221 Rapid thready pulse	1	2	3	4	5	NA
060213 Increased hematocrit	1	2	3	4	5	NA
060222 Increased blood urea nitrogen	1	2	3	4	5	NA
060223 Weight loss	1	2	3	4	5	NA
060224 Muscle cramps	1	2	3	4	5	NA
060225 Muscle twitching	1	2	3	4	5	NA
060226 Diarrhea	1	2	3	4	5	NA
060227 Body temperature elevation	1	2	3	4	5	NA

Domain-Physiologic Health (II) Class-Fluid & Electrolytes (G) 1st edition 1997; revised 2004, 2013

APPENDIX F

CLINICAL CARE CLASSIFICATION



21 Care Components by Four Patterns of Care

I. Health Behavioral Components

- Medication (H)
- Safety (N)
- Health Behavior (G)

II. Functional Components

- Activity (A)
- Fluid Volume (F)
- Nutritional (J)
- Self-Care (O)
- Sensory (Q)

III. Physiological Components

- Cardiac (C)
- Respiratory (L)
- Metabolic (I)
- Physical Regulation (K)
- Skin Integrity (R)
- Tissue Perfusion (S)
- Bowel Elimination (B)
- Urinary Elimination (T)
- Life Cycle (U)

IV. Psychological Components

- Cognitive (D)
- Coping (E)
- Role Relationship (M)
- Self Concept (P)

APPENDIX G

INVITATION TO PARTICIPATE

CALLING ALL NURSE CASE MANAGERS

I am asking for your help with understanding and improving the practice of nurse case managers. Health care reforms with the Patient Protection and Affordable Care Act and other initiatives such as the Patient-Centered Medical Home program are a few of the many reasons for the challenges and opportunities in case management.

According to article in the April 2012 issue of *CMSA Today* “The most important thing is to be proactive and start re-designing processes now to make them more automated and efficient.” More than ever it is important to understand the practice of nursing case management.

One area not often considered is documentation i.e. how nurse case managers record their work particularly in the electronic medical record but also other record keeping systems. Do record keeping systems adequately capture the work performed and support the clinical decision making for the nurse case manager? In particular does the record keeping system support the nurse case managers responsibilities when planning for groups of people. Thus the purpose of this survey is to better understand how nurse case managers describe groups of people, their health needs and the interventions used for the groups of people.

You are invited to take part in the research project. The purpose of this survey is to better understand how nurse case managers describe groups of people, their health needs and the interventions you use for the groups of people. If you decide to take part in this study, your participation will involve filling out an anonymous, online survey about your descriptions of the health needs and interventions and expected outcomes for groups of clients with diabetes mellitus. The survey will take approximately 30 minutes to complete. Responses to these items will be collected anonymously; this survey will gather no personal information from you. Your participation is entirely voluntary. If you have any questions, please feel free to call Kathy Gremel RN, PhD(c) at 1-401-465-7581, the person mainly responsible for this study.

Please consider helping. The survey can be accessed at www.surveymonkey.com/s/NCM1.

APPENDIX H

REMINDER INVITATION TO PARTICIPATE

REMINDER FOR SURVEY

Just a reminder to nurse case managers, please complete the online survey, which can be accessed at **(URL to access survey)**. I am asking for your help with understanding and improving the practice of nurse case managers.

You are invited to take part in the research project. The purpose of this survey is to better understand how nurse case managers describe groups of people, their health needs and the interventions you use for the groups of people. If you decide to take part in this study, your participation will involve filling out an anonymous, online survey about your descriptions of the health needs and interventions and expected outcomes for groups of clients with diabetes mellitus. The survey will take approximately 30 minutes to complete. Responses to these items will be collected anonymously; this survey will gather no personal information from you. Your participation is entirely voluntary. If you have any questions, please feel free to call Kathy Gremel RN, PhD(c) at 1-401-465-7581, the person mainly responsible for this study.

APPENDIX I
QUESTIONNAIRE



YOUR HELP IS NEEDED

Today there are **many challenges and opportunities facing nurse case managers** in light of the many legislative and technology changes. More than ever it is important to understand the practice of nursing case management. One area not often considered is documentation i.e. how nurse case managers record their work particularly in the electronic medical record but also other record keeping systems. **Do record keeping systems adequately capture the work performed and support the clinical decision making for the nurse case manager?** In particular does the record keeping system support the nurse case managers responsibilities when planning for groups of people. Thus the **purpose of this survey is to better understand** how nurse case managers describe groups of people, their health needs and the interventions used for the groups of people.

Please consider helping by completing this survey or you can access the survey online at **www.surveymonkey.com/s/NCM1**. **Thank You!**

CONSENT STATEMENT

Your participation in this survey is voluntary. You may choose not to participate. If you decide to participate in this survey, you may withdraw at any time. Whether or not you choose to participate in this project will have no effect on your relationship with the researcher or CMSNE.

We do not ask for your name and your responses will remain confidential. The survey will take approximately 30 minutes. All survey responses will be tabulated in a group format and the feedback/results will be made available. If you have any questions please feel free to contact Kathy Gremel at 1-401-465-7581.

A complete version of the consent form, which has been approved by the University of Rhode Island Institutional Review Board, is available. After your review of the consent, please complete the survey. By completing the survey, you are consenting to participate.

SURVEY

GENERAL QUESTIONS

Please check and/or write in the appropriate answers.

1. Are you a registered nurse?

Yes

No (*Please see not on next page.)

2. Are you a certified case manager?

Yes

No

3. What is your highest educational level?

Diploma

Masters in Nursing

Associate Degree

Master in Other Major

Baccalaureate

DNP or PhD

4. What is your job title for your current position?

Write In _____

5. What type of organization do you currently work?

Managed Care Co

Home Care

Hospital

Government Agency

Case Management Co

Third Party Administrator

Insurance Co.

Life Disability Insurance

Workers Comp

Other – Write in _____

Rehab Facility

6. How many years experience as a nurse case manager?

Write in _____

7. How many years experience as a nurse case manager in

Hospital _____

Rehab Facility _____

- Nursing Home _____ Home Care _____
- Managed Care Co _____ Third Party Administrator _____
- Case Management Co _____ Life Disability Insurance _____
- Insurance Co. _____ Other - Write in type & Number of
 Workers Comp _____ years _____
-

8. What are the names of the computer programs or applications do you currently use in your work? (Example electronic health record software, organizational systems, spreadsheets, word documents, etc.) _____

9. What is your gender?

Female

Male

10. Which category below includes your age?

≤ 39

40-49

50-59

≥ 60

11. What race/ethnicity best describes you? (optional)

Write In _____

- * The survey is designed for nurses but you are welcomed to complete the survey or provide any information you wish to share. Thank You.

CASE STUDY QUESTIONS

The next five questions relate the case study and ask you about the way you decide on a plan and what your plan would include. Please write in your response. You may use the back of the pages. Be sure that you number your responses if use back of pages.

You work as a nurse case manager in the main office for ABC insurance company. In your state, the main offices and administration are located in one of the larger cities, but there are also four other on-site locations where nurse case managers are assigned. The state is primarily an urban, suburban state but also has a few rural areas. The ABC insurance company has multiple product lines and one of these contracts is with the state's Medicaid program. You work for the Medicaid case management program of ABC insurance company. Recently the state surveyed Medicaid recipients and the report indicates the highest rates of diabetes across the state are subscribers of your company. The Chief Clinical Officer of your company has asked you for a plan outlining educational and case management activities for this population of 500 subscribers with Diabetes Mellitus.

12. How do you organize or divide the members into groups as you make a plan and what do you call each of the groups?

13. You first ask for a report about the 500 members. What data elements or information would you like to have on the report?

14. What interventions or strategies would you use for each of the groups and what do you call each of the groups?

15. How would you expect each of the groups to react to the interventions or strategies and what do you call each of these reactions to interventions or strategies?

16. Do you have any other comments, thoughts or suggestions?

APPENDIX J

SAMPLE POPULATION COMPARED TO ARTICLE BY PARK AND HUBER

	SURVEY		PARK & HUBER	
<i>GENDER</i>				
Female	19	100	23,019	95.6
Male	0	0	1,066	4.4
<i>AGE</i>				
>39	0	0	966	4
40-49	4	21	4,899	20.4
50-59	12	63.2	10,591	44.1
60+	3	15.8	7,543	31.4
<i>YEARS EXPERIENCE</i>				
<39	1	5.2	3,532	14.8
40-49	2	10.5	7,041	29.4
50-59	6	31.6	6,551	27.4
60+	10	52.6	6,795	28.4
<i>EDUCATION</i>				
BS	9	47.4	10,028	42.7
AD	1	5.2	5,478	23.2
Diploma	0	0	4,001	17
Master Nursing	7	36.8	3,990	17
Masters Other	2	10.5		
<i>SETTING</i>				
Independent	1	5.3	4,888	20.3
Hospital	7	36.8	4,317	17.9
Health Ins	2	10.5	3,419	14.2
Managed Care	2	10.5	3,083	12.8
WC	0	0	2,437	10.1
Rehab	1	5.3	1,050	4.4
Home care	0	0	738	3.1
Government	1	5.3	592	2.5
Third Party Administrators	1	5.3	484	2
Life/Disability Insurance	0	0	425	1.8
Other	4	21.1	3	11

APPENDIX K

RESPONSES TO QUESTIONS ON QUESTIONNAIRE

Research Question 1

How do you organize or divide the members into groups as you make a plan and what do you call each of the groups?

- Examine Utilization data and/ or use survey to gather info. Divide group highest need/ moderate need/ minimal need
- Lost time injured workers Or Medical only injured workers
- By level of intensity and patient category ie retired, active, family. Member, adults, Pediatrics
- group 1: those with actual diagnosis of Diabetes group 2: those with pre diabetes characteristics: overweight, borderline high glucose or A1C
- Age, young children adolescents, young adults adults
- I would divide patients into groups based on their HbA1C levels.
- Divide groups by level of disease newly diagnosed novice expert I order to develop educational materials appropriate to the learner plan the delivery of information/education using cm process
- Suggest separation by risk level highest being those who have had a hospital admission or ED visit in previous 12 months medium is those with no hospital or ED visit and no PCP or endocrinology visit in previous 12 months low is those who have no hospital or ED visit but who do regularly visit PCP or endocrinologist
- Ask for risk data to be stratified for patient identification and ranking. Sort by gaps in diabetic care, A1C score, total \$ spent.
- by risk stratification
- I would either divide by endocrinologist/pcp if that were available or by geography
- Review claims data for dx codes and tx experience and cost for current group. Review disease state Msnagement guidelines for ths dx Redesign publications on dx Contact providers in network at insured wg Ho tx ths dx and partner with them
- Age, high risk, co-morbidities, cost
- non-insulin dependent, age, high utilizes of services
- Type1, Type 2, Newly diagnosed, Recet A1C (6 mon=1yr), A1C <7->7, PCP visit past year, eye exam.
- Age, young children, adolescents, young adults
- Onternally: hi-risk, hi cost; need ris, med cost; low risk, low cost, age, income, neighborhood, by kid's school.
- High risk: multiple comorbidities, High Cost: multiple admissions & visits to ED, RC2 or RC5 or RC7: Mass health rating code
- Acute episodes, chronic case/dm mgmt.

Research Question 2

You first ask for a report about the 500 members. What data elements or information would you like to have on the report?

- utilization based on claims inpt, ED, Pharmacy, outpt visits, gap reports
- Are they working?
- Demographic diagnosis problem list, insurance, physician, admission history, family status, meds
- Member's weights, glucose results, hospitalizations for related symptoms (DRG's)
- A1C, Age, Years of Dx, Formal education level, complications of disease, formal education time, ever given info on illness
- I would like to have parameters by age, HbA1C in the last 6 months and their demographic information.
- Age pmh type of em duration of disease new onset etc. demographic info bAckground what if any education prior to this and their expectation is
- age, diagnosis codes reported (to reflect co-morbid and complications), dates of MD office visits, dates of admission, dates of ED visits
- See above
- pharmacy, ICD, health risk assessment, DRG, data
- demographics - age, race, name address, phone #. Onset of illness, last three aic, # office visits in the last year, evidence of nutrition eval, comorbidities, hospitalizations, er visits, pharmacy data
- Age, gender, tx codes, costs, inpt vs out pt tx patterns other dx codes & Tex's related to primary Dx, home care tx utilization & costs to tx dx at home
- age, IDDM vs NIDDM, Co-morbidities, HgbA1c results, weight.
- age, locating level of utilizer of service, ID vs NID, who has PCP & compliant with followup, blood sugar
- Same as #12 plus utilization of hospital & ER
- Age, years of Dx/DM, A1C, Complication of Dx, Formal educational level, ever given info on illness
- As above, age, costs, utilization
- Gender, Age, comorbidities, admission dates & diagnoses
- OP services/ER visit, admissions

Research Question 3

What interventions or strategies would you use for each of the groups and what do you call each of the groups?

- Hi Mod Lo Hi: intense face to face or telephonic CM with SOcial supports as needed Mod: basic CM with social supports as needed Lo: mail info/ text message or auto teleohonic interventiosn
- Medical only group: receiving effective treatment so they can continue to work Group 2. Lost time injured workers Pain controlled? Receiving treatment to assist them to get better and return to work?
- Intensity. Frequency of intervention

- Prevention group..have CM's visit each member who's at risk for education; attempt at enrolling them in a short intervention class(es) regarding weight loss, diet, exercise Treatment group: have CM visit each patient, provide the same education as above, encourage more frequent visits to the PCP
- young children
- I would make an outreach call followed by a letter if I was not able to reach the patient. Once I reach the patient I would set up educational sessions with me or in a group setting. The 2 groups would be those that are ready to make lifestyle changes and those that are not ready.
- Will be dependent on group needs as well as individual. Needs
- high-intense CM assessment and interventions medium-CM outreach for further assessment and strategies for low risk group low-regular educational mailings with available 24 hour health coach-type resource
- Gaps in care A1C score Total \$ spent
- low, medium, and high risk low- clinical info medium- light case mgmt high-intensive case mgmt
- newly diagnosed - education related to diet, foot care, skin care and basic diabetic care, including exercise patients with minimal comorbidities - education around care and treatment, signs and symptoms. Monthly phone care to verify med and nutrition compliance Severely affected either by a1c records,er visits or hospitalizations - weekly phone call, home care referral to set up individualized care plan
- Cross reference 3 groups for dx, tx, costs & provider types and names
Groups called: Home care Inpatient And Outpt/clinic groups
- Educational baseline assessment, nutritional assessment, diabetic CM program, educational materials
- Assigned to CM for each of groups: lesser offering support, telephonic worker, CM to followup pt in PCP to home to hospital
- Mailing for all, supported with visit/phone calls, collaborate with PCP, Diabetes Educator Appt, Educate, engage, empower
- Young children
- Dx management nurses for high need risk gorups: Calls, visits, interface with VNA/PM RNs. Education: train hairdressers, church workers, women's shelter workers to do outreach, education.
- Education for 3 groups, care coordination, followup
- Education-symptom recognition, strategies for prevention of acute

Research Question 4

How would you expect each of the groups to react to the interventions or strategies and what do you call each of these reactions to interventions or strategies?

- increase primary care increase filling of scripts decrease hospital and ED claims high member satisfaction for face to face and direct telephonic intervention for those engaged.
- Medical only injured workers: I expected limited interactions as they are working Lost time injured workers: I expect to communicate with them to

discuss treatment and diagnostic testing to facilitate recovery and return to work

- Frequently follow up and care coordination is appreciated. Call groups weekly, bi-monthlies, monthlies.
- Some of the people will be open to education and support; others will be less so. Typically, the word used to describe non adherence to a treatment plan is 'non compliance'. For those that are not following the plan, I might include a visit from the social worker trying to find out what might be the resistance to change: it could be finances, depression, or some other psychosocial issue
- Get better if motivated
- Those that are ready to engage in lifestyle changes will be willing to make changes and I would encourage them to make small changes over time. The second group realize that they need to do something but aren't willing and take a passive attitude toward diabetes.
- Expect positive outcome although would want all feedback neg or positive I would call these member responses
- would expect reactions would range from acceptance/agreement/participation to anger/rejection. That is OK. This will be a process. It is important to meet people where they are at and address their priorities. Over time, by working on issues that are of importance to the patient, would hope that CM could develop a trusting relationship that will be a resource.
- Gaps in care-hopefully would agree to appt. A1C score-assess for barriers to care Total \$ spent-would not discuss with patient, but would consider comorbid
- some resistance, some uncooperative, some motivated
- appreciation avoidance anger related to perceived invasion fear - "If I tell you how I live, will you send me to a nursing home?"
- Collaboration and cooperation anticipated as response to the research and program educational process Same names as noted above in #15
- Less response from younger patients, non-compliance potential, denial
- Establish identifiers with provider to refer to each group - provide CM follow up
- Certain amount of people will not be responsive, Probably group with new diabetes more receptive.
- -
- Peer-to-peer outreach's usually well rec'd. For isolate/elders, regular plans-visit care too.
- Clarification, understanding, self care, followup with appropriate provider, follow through with plan, resolution of issue, problem solving, initiative taking.
- Engaged, motivated/nonmotivated

Comment, Thoughts or Suggestions

- Significant numbers may not engage or be difficult to locate. Requires multiple different strategies and assistance to Nurse CM with Admin help or other support staff

- No
- Thanks
- these plans assume unlimited Nursing resources to provide a case management approach to this 'high risk group'. Limited nursing resources, limit the plan of course; we might have to tailor it to those who are hospitalized more than once a year for symptomology related to diabetes. the Psychosocial /economic picture of these Medicaid clients are very influential in treatment plan success or failure.
- When I work with patients with diabetes I find that making therapeutic lifestyle changes should be done slowly and over several months, to be successful.
- Nope
- Online research and publications that ave done like studies for review Include both private and public sector article and research
- Great survey. Thank you.
- ID high utilizers & provide support, ID new diabetics & provide teach/support at young age.
- Meet with patients at doctor's office, utilize diabetes educator/nutritionist, Followup 2 we then 3 months after that depending on adherence, goals, achiveent of goals.
- What the heck does it matter what I want to call them? Ask the participanats for their ideas.
- Good luck with your dissertation and beyond!

APPENDIX L

TERMS FROM QUESTION RESPONSES

Research Question1 - Descriptors & Names

Highest need/moderate need/minimal need	provider type
Lost time injured workers or medical only injured workers	newly diagnosed
Level of intensity	recentness of service
retired, active, family, member, adults, pediatrics	hi-risk, hi-cost, need risk, med cost, low risk low cost;
Those with actual diagnoses and those with pre diabetic characteristics	age
age categories	income
Group by HbA1C levels	neighborhood
newly diagnosed, novice, expert	kid's schools
gaps in diabetic care	High risk
A1c score	High cost
total \$ spent	Mass health rating system
risk stratification	insulin dependent
	Utilization
	Demographic

Research Question2 - Data Elements

utilization (ER/Hospitalization)	new onset
work or living impact	dates of MD office visits
intensity of dx	dates of admission
work or living level/type	dates of ED visits
disease related groups	pharmacy, ICD
pre-disease factors	health risk assessments
age	DRG
lab values	demogrphais (age, race, name, address, phone)
newness of diagnoses	onset of illness
type of service needed	last three A1C
healthcare provider	# office visits in the last year
geography	evidence of nutrition eval
cost	comorbidities
claims data	hospitalizations
co-morbidities	ER visits
cost	Pharmacy
services received (eye exam)	Age
multiple morbidities	tx codes
acute or chronic episodes	costs
claims - inpt, ED, pharmacy, outpt	inpt vs outpt tx patterns
visits, gap reports	other disease codes
working or not	tx related to primary dx
diagnoses problem list	home tx
insurance	utilization & costs to tx dx at home
physician	age
admission history	locating level of utilizer of services
family status	ID vs NID
meds	who has PCP
weights	Compliant with followup and blood
glucose results	sugars
hospitalizations for related symptoms	utilization of hospital and ER
A1C	age years of dx/DM
Age	A1C
years of dx	Complication of dx
formal education	formal education level
complications of dx	client satisfaction
formal education time	utilization
ever given infor on illness	
type of dm, duration of dx	

Research Question3 - Interventions

Develop educational material
appropriate to learner newly diagnosed,
novice, expert
face to face
telephonic
social supports
mail info
text message
auto telephonic
pain control
enroll in short intervention classes eg
weight loss, diet, exercise
encourage PCP visits
educational sessions with CM or
groups
CM assessment and interventions
educational mailings with available 24
hr health coach-type resource
education for diet, foot care, skin care
and basic diabetic care, exercise
education around care and treatment,
S&S
monthly phone care, weekly phone
call, home care referral for individual
plan

Educational baseline assessment
nutritional assessment
diabetic CM service
telephonic support, telephonic worker
CM followup in PCP, home, hospital
Calls
Visits
interface with VNA/PM RNs
education
train hairdressers, workers, women's
shelter workers to do outreach
education
care coordination
follow up
education symptom recognition
face to face interaction
telephonic interventions
peer to peer outreach for isolate/elders
Meet with patients at doctor's office
utilize educators, nutritionist
redesign education
home care, inpatient, outpatient
disease management nurse

Research Question4 - Outcomes

increase PCP
increase filling of scripts
decrease hospital and ED claims
high member satisfaction
expect more interaction with clients
return to work
appreciate follow up and care coordination
some more and some less open to education and support
follow the plan
possible resistance related to depression, finances, etc.
be willing to change
positive outcomes;
develop a trusting relationship
use CM as a resource
decrease gaps in care - go to appts
Less total \$ spent

motivated
some resistance, some uncooperative
collaboration and cooperation
less response from younger patients, non-compliance potential, denial
establish identifiers
responsive and some not responsive
new diabetes more receptive
clarification & understanding
self-care
follow through with plan
resolution of issue
engaged
motivated/nonmotivated
regular visits
achievement of goals

APPENDIX M

UTILIZATION CATEGORY

Subcategory	Population	Assessment	Interventions	Outcomes
Utilization	• Utilization	• Utilization • Claims data • Claims inpt, ED, pharmacy, outpt visits	•	• Utilization
Hospitalization	•	• <u>Utilization hospitalization (2)</u> • Hospitalization • Dates of hospitalization • Claims inpt • <u>Reason for hospitalization</u> • Hospitalization for related symptoms • ICD • DRG	•	• <u>Decrease hospital claims</u>
Emergency Room	•	• <u>ER visits</u> • Utilization of ER (2) • Claims ED • Dates of ED visits	•	• <u>Decrease ED claims</u>
Labs	•	• Lab values	•	•
Scripts	•	• <u>Pharmacy (2)</u> • Claims pharmacy	•	• <u>Increase filling of scripts</u>
Office Visits- Provider Type Home care Services	• • •	• <u>Dates of MD office visits</u> • # office visits in the last year • Utilization (&cost) to tx dx at home • <u>Locating level of utilizaers of services</u> • Services received • Claims outpt	• • •	• <u>Increase PCP</u> • •
Gaps or Missing Services	• Gaps in diabetic care	• <u>Gap reports</u>	•	• <u>Decrease gaps in care - go to appts</u>

Underlined Terms: Heading of grouping of terms. (Italicized Reason for Hospitalization was created by researcher.)

Cross-out Terms: Utilization was eliminated because it is same as the subcategory; Labs subcategory was moved to Disease Related Category; Home Care moved to Service Providers; Service Providers combined office visits, home care, and services into a single subcategory.

APPENDIX N

COST CATEGORY

Subcategory	Population	Assessment	Intervention	Outcomes
Money spent	<ul style="list-style-type: none"> • <u>Total \$ spent</u> • High cost • Med cost • Low cost 	<ul style="list-style-type: none"> • Cost (3) • Utilization (&cost) to tx dx at home 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • <u>Less total \$ spent</u>
<u>Claims</u>	<ul style="list-style-type: none"> •- 	<ul style="list-style-type: none"> • <u>Claims data</u> • Claims - inpt, ED, pharmacy, outpt visits 	<ul style="list-style-type: none"> •- 	<ul style="list-style-type: none"> •-

Underlined Terms: Heading of grouping of terms.

Cross-Out Category: Cost items in assessment same as category name. Claims terms moved to Utilization

APPENDIX O

DISEASE RELATED CATEGORY

Subcategory	Population	Assessment	Intervention	Outcome
Lab Value	<ul style="list-style-type: none"> • <u>A1C</u> (6) • Last 3 A1C • <u>Glucose results</u> 	<ul style="list-style-type: none"> • Last 3 A1C • A1C (2) • Glucose results 	•	•
Complexity of disease	<ul style="list-style-type: none"> • <u>Group by HbA1C levels</u> • <u>Newly diagnosed</u> • Recentness of service • 	<ul style="list-style-type: none"> • <u>Intensity of dx</u> • Inpt vs outpt tx patterns • Acute or chronic episodes • <u>Years of dx</u> (2) • Duration of dx • New onset • Onset of illness • <u>Type of Dm</u> • ID vs NID • Insulin dependent • Pre-disease factors • Those with actual diagnoses and those with pre diabetic characteristics • Disease related groups 	•	•
Complications	•	• <u>Complications of dx</u> (2)	•	•
Co-morbidities	•	<ul style="list-style-type: none"> • <u>Co-morbidities</u> (2) • Multiple morbidities • Diagnoses problem list • Other disease codes 	•	•

Underlined Terms: Heading of a grouping of terms.

APPENDIX P

TREATMENT RELATED CATEGORY

Subcategory	Population	Assessment	Intervention	Outcome
Service Providers	<ul style="list-style-type: none"> • <u>Provider type</u> • Healthcare provider • Physician • Who has PCP 	<ul style="list-style-type: none"> • Healthcare provider • Physician 	<ul style="list-style-type: none"> • <u>Encourage PCP visits</u> 	<ul style="list-style-type: none"> • <u>Regular visits</u> • <u>Follow the plan</u> • Follow through with plan
Services		<ul style="list-style-type: none"> • <u>Type of service needed</u> • Evidence of nutrition eval • Tx codes • Tx related to primary dx • Home tx • Nutritional assessment • Utilize educators, nutritionist • Home care, inpatient, outpatient • Disease management nurse 		
Medications	•	• Meds	•	•
Education	•	<ul style="list-style-type: none"> • Ever given infor on illness • Develop educational material appropriate to learner newly diagnosed, novice, expert 	<ul style="list-style-type: none"> • <u>Education (2)</u> • Enroll in short intervention classes eg weight loss, diet, exercise • Educational sessions with CM or groups • Education for diet, foot care, skin care and basic diabetic care, exercise • Education around care, treatment, S&S • Educational baseline assessment • Educational mailings with available 24 hr health coach type resource • Education symptom recognition • <u>Develop</u> 	•

Subcategory	Population	Assessment	Intervention	Outcome
			<u>educational</u> material appropriate to learner newly diagnosed, novice, expert • Redesign education	
Type of Interaction	•	•	• <u>Face to face</u> • Face to face interaction • Visits • <u>Telephonic</u> • Telephonic interventions • Auto telephonic • Calls • <u>Text message</u> • <u>Mail info</u>	•
Coordination	•	•	• <u>Care coordination</u> • Monthly phone care, weekly phone call, home care referral for individual plan • Diabetic CM service • Interface with VNA/PM RNs • <u>Follow up</u> • CM followup in PCP, home, hospital	•
Support/Coach	•	•	• <u>Social supports</u> • health coach-type resource • Peer to peer outreach for isolate/elders • Meet with patients at doctor's office • Telephonic support, telephonic worker • Train hairdressers, workers, women's shelter workers to do outreach	•

Underlined Terms: Heading of grouping of terms.

Cross-out Terms: Service subcategory combined with provider subcategory; Healthcare provider and physician were moved under grouping of Provider type; Develop education moved to intervention; health coach-type resource moved to support subcategory; Diabetic CM service was considered too broad since the question are about case management.

APPENDIX Q

PEOPLE FACTORS CATEGORY

Subcategory	Population	Assessment	Inter-vention	Outcome
Physical characteristics	<ul style="list-style-type: none"> • <u>Age (6)</u> • Adult • Pediatrics 	<ul style="list-style-type: none"> • <u>Weights</u> • Age (4) • <u>Gender</u> • <u>Race</u> 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Satisfaction		<ul style="list-style-type: none"> • Client satisfaction • Compliant with followup and blood sugars 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • <u>Client Satisfaction</u> • High member satisfaction • Appreciate follow up and care coordination •
Motivation			<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • <u>Motivated</u> • Be willing to change • Motivated / nonmotivated • Possible resistance related to depression, finances, etc. • Some more and some less open to education and support • New diabetic more receptive • Engaged • <u>Responsive and some not responsive</u> • Less response from younger patients, non-compliance potential, denial
Living Factors Location	<ul style="list-style-type: none"> • Neighborhood • Kid's schools 	<ul style="list-style-type: none"> • <u>Geography</u> • Address/phone • Neighborhood • Kid's schools • Isolated/elders • 	<ul style="list-style-type: none"> • 	
Work/Social	<ul style="list-style-type: none"> • <u>Activity Level</u> • Retired, active, family, member • Lost time injured workers or medical only injured workers • <u>Income</u> 	<ul style="list-style-type: none"> • <u>Work or not</u> • Work or living level/type • work or living impact • <u>Family status</u> • family • <u>Insurance</u> • member 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • <u>Return to work</u> • <u>Self-care</u>
Formal Education	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • <u>Formal education (3)</u> 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Collaboration	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 		<ul style="list-style-type: none"> • <u>Collaboration and</u>

Subcategory	Population	Assessment	Inter-vention	Outcome
				<u>cooperation</u> <ul style="list-style-type: none"> • Use CM as a resource • Expect more interaction with clients • Develop a trusting relationship • Some resistance, some uncooperative • <u>Compliance</u> • Clarification & understanding • Compliant with followup and blood sugars
Experience with Disease	<ul style="list-style-type: none"> • <u>Newly diagnosed, novice, expert</u> 	<ul style="list-style-type: none"> • Newness of diagnoses 		

Underlined Terms: Heading of grouping of terms.

Cross-out Terms: Age combined into one set of terms; Client satisfaction moved to outcome column; Compliant moved to outcome column of cooperation; Neighborhood and kid's school move under geography; Family and member moved to family status and insurance respectively.

APPENDIX R

CMSA STANDARDS OF PRACTICE FIRST SEVEN STANDARDS

1. **STANDARD: PATIENT / CLIENT SELECTION PROCESS FOR CASE MANAGEMENT:** The case manager should identify and select patient / clients who can most benefit from case management services available in a particular practice setting.
How Demonstrated:
 - Consistency of the selection process with the individual organization's policies and procedures.
 - Use of high risk screening criteria to assess for inclusion in case management programs. Some examples of high risk screening criteria include, but are not limited to:
 - >75 ages of age
 - Poor pain control
 - Low functional status
 - Previous home health / durable medical equipment usage
 - History of mental illness or substance abuse
 - Chronic illnesses, e.g. end stage renal disease, diabetes, congestive heart failure
 - Social Issues such as a history of abuse / neglect, no known social family support; lives alone
 - Repeated emergency department visits
 - Repeated admissions e.g., >3 hospitalizations within 6 months
 - Need for admission or transition to a post acute facility
 - Disability
 - Chronic / Terminal illness
 - Poor nutritional status
 - Financial issues

2. **STANDARD: PATIENT / CLIENT ASSESSMENT:** The case manager should complete a comprehensive, culturally and linguistically sensitive assessment of each patient / client.
How Demonstrated:
 - Completion of assessment using standardized tools when appropriate. Some examples may include, but are not limited to the following components as pertinent to the case manager's practice setting:
 - Physical/functional
 - Medical History
 - Psychosocial
 - Behavioral

- Cognitive
 - Patient / client strengths and abilities
 - Environmental and residential
 - Family dynamics and support
 - Spiritual
 - Cultural
 - Financial
 - Health insurance status
 - History of substance use
 - History of abuse, violence, or trauma
 - Vocational and/or educational
 - Recreational/leisure pursuits
 - Caregiver(s) capability and availability
 - Learning and technology capabilities
 - Self care capability
 - Health status expectation and goals
 - Transitional or discharge plan
 - Advance care planning
 - Legal
 - Transportation
- Documentation of resource utilization and cost management; current diagnosis(es), past and present treatment course and services; prognosis, goals (short-/long-term), provider options, and available healthcare benefits.
 - Use of relevant, comprehensive information and data required for patient / client assessment from many sources including, but are not limited to:
 - Patient / client interviews
 - Initial assessment and ongoing assessments
 - Physicians, providers, other members of the interdisciplinary healthcare team
 - Medical records
 - Data: claims and or administrative

3. STANDARD: PROBLEM IDENTIFICATION: The case manager should identify problems that would benefit from case management intervention.

How Demonstrated:

- Agreement among the patient / client system and other providers and organizations regarding the problems identified.
- Identification of opportunities for intervention, including, but are not limited to:
 - Lack of established, evidenced-based plan of care with specific goals
 - Over-utilization or under-utilization of services

- Use of multiple providers/agencies
- Use of inappropriate services or level of care
- Non-adherence to plan of care (e.g. medication adherence)
- Lack of education or understanding of:
 - The disease process
 - The current condition
 - Medication list / medication reconciliation
- Medical, psychosocial, and/or functional limitations
- Lack of family/social support/primary caregiver
- Financial barriers to adherence to the plan of care
- Family and/or caregiver stress
- Determination of patterns of care or behavior that may be associated with increased severity of condition
- Compromised patient safety
- Inappropriate discharge or delay from other levels of care
- High cost injuries or illnesses
- Complications related to medical, psychological or functional issues

- 4. STANDARD: PLANNING:** The case manager should identify immediate, short-term, and ongoing needs, as well as develop appropriate and necessary case management strategies to address those needs.

How Demonstrated:

- Gathering of relevant, comprehensive information and data, using interviews, research, and other methods needed to develop a plan of care.
- Understanding of the patient / client's diagnosis, prognosis, care needs, and outcome goals of the plan of care.
- Validation that the plan of care is consistent with evidence-based practice, when such guidelines are available.
- Establishment of measurable goals and indicators within specified time frames. Measures should include access to care, cost-effectiveness of care, and quality of care.
- Agreement among the patient / client system, providers and other organizations regarding the plan of care.
- Facilitation of problem solving and conflict resolution.
- Supplying all the information necessary to make informed decisions.
- Maximization of patient / client outcomes by all available resources and services.

- 5. STANDARD: MONITORING:** The case manager should employ ongoing assessment and documentation to measure the patient / client's response to the plan of care.

How Demonstrated:

- Ongoing collaboration with the patient / client system and other providers and organizations, so that the patient / client's response to interventions is reviewed and incorporated into the plan of care.
- Consideration of circumstances necessitating revisions to the plan of care, such as changes in the patient / client's condition, lack of response to the care plan, transitions across settings, and barriers to care and services.
- Verification that the plan of care continues to be appropriate, understood and documented.
- Collaboration with the patient / client system and other providers and other organizations regarding any revisions to the plan of care.

- 6. STANDARD: OUTCOMES:** The case manager should maximize the patient / client's health, wellness, safety, adaptation, and self-care.

How Demonstrated:

- Evaluation of the extent to which the goals documented in the plan of care have been achieved.
- Evaluation of the efficacy of the case manager's interventions achieving the goals documented in the plan of care.
- Measuring and reporting of the impact of the plan of care.
- Utilization of adherence guidelines, standardized tools and proven processes to measure individuals' understanding of the proposed plans, their willingness to change, and their support to maintain health behavior change.
- Use of evidence-based guidelines in appropriate **patient / client** populations.

- 7. STANDARD: TERMINATION OF CASE MANAGEMENT SERVICES:** The case manager should appropriately terminate case management services.

How Demonstrated:

- Agreement of termination of case management services by the patient / client, payer, case manager, and/or other appropriate parties.
- Identification of reasons for case management termination, such as:
 - Achievement of targeted outcomes
 - Change of health setting
 - Loss or change in benefits
 - Determination by the case manager that he/she is no longer able to perform or provide appropriate case management services
- Documentation of reasonable notice of termination of case management services that is based upon the facts and circumstances of each individual case.
- Documentation of both verbal and written notice of termination of case management services to the patient / client and to all treating and direct service providers.

- With permission, communication of patient information to transition providers to maximize positive outcomes.

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