A classification scheme to determine medical necessity:
A knowledge organization global learning application

Abstract: The use and application of knowledge organization concepts and designs is pervasive in this current global learning society. Individuals, groups and organizations benefit from these knowledge organization tools to improve and enhance learning and system workflows. Practitioners in many disciplines deal with conflicts and problems encountered in managing and enhancing information with solutions and strategies that are inherent and unique in their respective domains, yet germane to the Information Science field. Classification theory is one such Information Science concept that plays a crucial role when organizing the body of knowledge in all disciplines, including Nursing.

Determining the medical necessity of clients who require home care nursing is often onerous to prove. Nurses can use a classification scheme to establish nursing care that is reasonable and necessary for potential home care clients. This classification mechanism can be useful when determining the criteria for skill need required for reimbursement by Medicare and other health insurance payors.

This research is an exploratory attempt at developing this practical tool. Nurses with home care experience were surveyed and interviewed using home care scenarios. The focus was on how nurses qualify home care clients’ appropriateness for services and their medical necessity. The result was a tri-level classificatory scheme to outline this process and its ontological representation.

1.0 Introduction

Classification plays an essential component in managing and organizing the body of knowledge in any given discipline. It provides order and structure to concepts, theories, principles, issues, concerns and phenomena that make up its realm and scope of practice. The profession of Nursing is no exception.

Insurance reimbursement for home care services is based on medical necessity. A certified home care provider needs to document and show evidence of reasonable, medically necessary care in order to be reimbursed by Medicare and most other health insurance. For instance, in October 2000, Medicare began requiring home care nurses to document their assessment of home care patients’ needs using the Outcome Assessment Information Set (OASiS). The OASiS is a comprehensive, specific and detailed assessment tool used to define the scope and level of care needed by home care patients.

Nurses perform various activities and interventions simultaneously or at different points in time during the care episode of a home care patient. Many times, medical necessity is easy to prove, but in other cases, it needs to be demonstrated, proven and well documented in the patient’s record. A quick and easy classification tool will be helpful to nurses when qualifying potential services as essential and reasonable even before initiating patient care services.

2.0 Problem Identification & Statement of Purpose

Classification entails cognitive processes of perception, critical thinking, conceptualization and problem-solving as data are processed and placed in meaningful and rational groupings or order. Marco and Navarro (1993, 126) consider classification “central to human response in all the aspects of its relationship with its environment.” It involves a process of gathering data from internal and external resources, organizing and sorting these based on set criteria or likeness, analyzing for rationality or meaning, either singly or by groups, and being able to identify concepts into categories as relationships between and among them are established.
Visiting a home care client for the first time to assess the potential of providing for home care services is a daunting experience. It involves gathering innumerable physical, psychological, social and environmental cues by the visiting nurse from the potential client, family or significant others. The nurse utilizes either Federal, State, professional or personal tools, forms and guidelines to collect data, and makes either written or mental notes helpful in analyzing the specific nursing needs of the client. All the physical signs and symptoms, pertinent history, diagnostic and laboratory results are placed in relevant categories, resulting in the patient’s problem list being generated. Additionally, all these information assist the nurse in determining the client’s medical necessity for home care services.

The Library of Congress Subject Headings (2003) only lists nursing assessments, observations, diagnoses and outcomes. It does not include a category for “nursing interventions”. Furthermore, the subject heading “home care services” covers only certain home remedies or alternatives, but does not include one for “home care nursing interventions”. The same findings are true with the Dewey Decimal Classification System (2003). There is no subdivision for “home nursing interventions,” under the division “home care services,” and under the class for “nursing.”

There are presently classification systems used in nursing, such as the North American Nursing Diagnosis Association (NANDA) that provides standardized nursing diagnoses, the Nursing Interventions (NIC) and Nursing Outcomes (NOC) classifications, and even the Home Health Classification System (Dochterman and Jones, 2003). These scholarly and elaborate classifications have been in place and continue to evolve, providing various theoretical, clinical, administrative and system contributions and advantages. However, what this research aims to achieve is to develop a quick and easy mental mapping work tool that nurses can use as a cognitive framework when making that initial determination of what home care services are required by any particular client and whether these might conform to medical necessity parameters.

Medicare pays for home care services for clients who are homebound and who require skilled nursing. Homebound is defined as the condition whereby a client is limited to the confines of the home because of severe weakness or unsteady gait, or when ambulation is taxing and severely impaired that the client requires assistance either by another person or an assistive device. Skilled nursing is demonstrated in any one of the following four categories, namely: (1) observation and assessment activities, (2) skilled procedures, (3) teaching and training patients and significant others, and (4) management and evaluation of the plan of care (Medicare Home Health Agency Manual, 1998).

Observing a client’s response to chemotherapy, assessing for side effects to treatment, and following the progression of the patient’s adjustment to performing activities of daily living (ADLs) are examples of the first category (assessment and observation activities). Skilled procedures (category 2) are more technical, precise and specific. Examples are wound care, injections and physical therapy. Category 3 teaching and training activities are exemplified when the nurse teaches the client or significant others on diet, medications and exercise. It is also illustrated by the nurse who trains the client to perform ADLs after a stroke episode. Examples of management and evaluation of the plan of care (Category 4) are teaching and supervising the client and the family with diabetic management, as well as evaluating the effectiveness of the treatment and self-monitoring of blood glucose and self-administration of insulin.

Classifying nursing needs into categories can make it more concrete and easily discernible to qualify medical necessity. This classification work tool will also help make the nurse focus the home visits and the resulting documentation based on this categorization of medical necessity.
This exploratory research is a look into a knowledge organization global learning application of the use of classification in the discipline of Nursing, particularly in home care, with an attempt to answer the following research question:

Can home care nurses use a classification scheme to determine medical necessity of home care services for their clients?

3.0 Conceptual Framework

Determining whether or not a client meets any of the criteria for medical necessity involves a series of steps in classification. When a home care nurse first encounters a client, a string of problem solving processes are carried out. Each step of the nursing process (assessment, intervention, and evaluation) involves information processing and critical thinking to be able to advance to the next step.

Problem solving begins during the initial home care visit with the first step in the nursing process – the assessment stage. The main goal involves assessing the client and the social network for any home care nursing needs or diagnoses. A pertinent component of this assessment includes qualifying the client for medical necessity, particularly when the client’s services are to be covered by health insurance. From this assessment, the nurse establishes the needs of the client, plans out appropriate nursing interventions and sets out indicators for evaluation. The nurse employs various data-gathering tools to complete the assessment phase, such as physical assessment skills, interviewing techniques, environmental survey or scanning, laboratory and diagnostic examinations, history taking, and observation.

The nurse processes data obtained during the assessment phase utilizing critical thinking skills. A salient aspect of critical thinking is being able to discriminate and categorize items from a whole set of alternatives. The nurse perceives the client, with all the presenting medical, physical, psychological and social needs, and analyzes these data based on her professional knowledge and judgment, and determines whether or not a problem or need exists. Once problems are identified, a plan of care is consequently formulated. The same critical thinking comes into play when devising this plan of care. A range of possible nursing interventions is sorted out and classified based on identified needs, and the most appropriate and relevant actions, interventions or tasks are considered for implementation. The next step is formulating parameters for determining effectiveness, and critically selecting and classifying the most suitable evaluation measures from a variety of choices.

A by-product of this nursing process is a concise summary of the client’s total home care needs and required nursing care which is used by the nurse to obtain a general perspective of the client’s overall home care requirements.

There are nursing interventions that obviously spell out medical necessity, as in the case of physical therapy for a post-stroke client, or teaching a new diabetic how to monitor blood glucose and self-administer insulin. However, there are cases when interventions, when taken in isolation, may not be enough justification for medical necessity. Taking several interventions and grouping them together might be necessary. For instance, take the case of a demented client who does not know when to take his medications, wanders at night, forgets to eat and has no one to help in the home. This patient requires several, different simple interventions, such as, assigning a home health aide to assist with personal care, having a nutritionist set up a diet plan, pre-filling injectable medications, meeting with the family to set up a teaching schedule for medication pre-filling and administration, and other related nursing interventions. Taken collectively, these actions fall under the fourth classification of reimbursement for skilled nursing need--management and evaluation of the plan of care.
Providing a classificatory application to assist nurses ascertain medical necessity of the client’s needs for home care services is important at this time of burgeoning health care costs and managed care. Clients will receive appropriate and medically reasonable care that is efficient, focused and less costly. This knowledge organization work tool will not take the place of current classification schemes. It will be a practical and systematic instrument that nurses can use to mentally map their clients’ needs and determine medical necessity.

4.0 Methodology

This is an exploratory and qualitative research, designed to pilot a classification scheme of nursing interventions based on Medicare’s categorization of skilled needs. Two data-gathering tools were employed: scenario analysis and interview.

Respondents were asked to examine and analyze home care scenarios lifted from real-life situations, and to list all the potential assessment data and patient care needs. From this information, the case study participants were asked to identify and prioritize all possible nursing diagnoses identifiable and the appropriate nursing interventions for each.

A follow-up interview of the participants was set up to gather qualitative responses to help identify the cognitive processes used in devising their listing and prioritization. Specifically, the goals of the interview were to describe the assessment and critical thinking processes used by the nurses and how medical necessity was eventually determined from the list of overall nursing needs of the clients.

Volunteer respondents were sought among nursing students of Long Island University in New York, USA, particularly those with past or current home care work experience. A total of 5 students participated in the case study.

5.0 Results and Analysis

The results of the case study show that nurses use classification in their home care practice, from their initial meeting with the clients, proceeding towards formulating their plan of care, until a determination for medical necessity and a home care episode is established.

5.1 Concept Map of Tri-Level Classification

A striking observation from the case scenario analysis and interviews of the nurse-participants is their clear use of mental classificatory mapping. Hert (1997) describes concept mapping as a graphical representation of creative problem solving, or a picture display of the logical relationships between concepts. This is demonstrated by the nurse who embarks on a problem-solving task during the initial home visit of a client. This representation of the mental problem-solving is illustrated in the tri-level classification process shown in Figure 1.

Level I Classification is the initial step of determining the client’s appropriateness for home care. This takes into consideration two components: adequacy of home care support and the client’s safety in the home. This process is carried out by physically scanning and obtaining a general assessment picture of the client’s home environment, including the number of help and support available to assist. If the client is deemed inappropriate for home care, all other phases cease as the patient is not accepted into the home care program.

Adequacy of home care support refers to the availability of sufficient family, friends, neighbor or private help who are willing and able to assist in caring for the client. Obvious inadequacies in the support system present more risks to the already impaired health status of the client. However, a limited support network might be acceptable once adjustments are made, such as rearranging the schedule of the support person, contracting for paid assistance, or complementing help from a home health aide.
Figure 1: Tri-Level Classification Process for Determining Medical Necessity (using Medicare categories for skill home care needs)
In terms of client safety, two aspects are examined. The home environment is appraised for any safety concerns such as adequacy of space, absence of accident hazards, and presence of heat and water supply. The client is also assessed in terms of physical condition – the level of severity of the illness that can be sufficiently and safely cared for in a home setting.

This Level I stage addresses the initial categorization of whether or not any client is considered safe for home care. Both factors of safety and care support are reasonably adequate and addressed. Any deficiencies in either one should be adjusted, i.e., providing services of an aide to augment the care support, or asking family or significant others to correct home environment issues prior to initiation of services. Otherwise, if there are serious doubts about the client’s appropriateness in a home setting, no home care should be considered at all. Progression to other levels in the classificatory work tool stops and is no longer feasible.

The next phase ensues once a determination is made of the patient’s safety. Level II Classification commences with the comprehensive assessment of the patient in terms of relevant physical signs and symptoms, diagnostic and laboratory results, and pertinent medical and family history. The nurse-respondents describe this process as going through all data, sorting these based on relevance, filtering those that are unnecessary, organizing them into similar and logical groupings (those that render evidence to support a nursing diagnosis), and listing all applicable nursing diagnoses. Hand in hand with this stage is the ranking of priority problems. What follows is an itemization of all appropriate nursing interventions that address the pertinent nursing diagnoses.

Level II is analogous to the three-stage problem solving process mentioned by Hert (1997, 54), namely: fact finding, idea finding and solution finding. When nurses sort numerous assessment data, they are essentially fact finding, or identifying relevant signs and symptoms that spell out abnormalities or deviations from norms. Anything that does not appear normal is a reiteration of the fact that the client is indeed in a state of medical care need (assessment of nursing needs through cues, signs and symptoms). These data are then grouped, and nurses venture into idea finding (nursing diagnosis identification) from analyzing similarities, relationships and logical explanations within the groupings (domains of nursing diagnoses). The third and final step of solution finding is the counterpart of determining nursing interventions for the respective nursing diagnosis.

Once the second phase of the process is accomplished, nurses proceed to Level III Classification – ascertaining medical necessity. From listing all possible nursing tasks and actions required by the patient, nurses then group these into similar or related criteria. Finally, nurses determine which of the categories for skill needs fulfill Medicare guidelines that will permit reimbursement (observation and assessment, teaching and training, skill procedure, and management of the plan of care). Interventions may fall under one or more of these skill categories.

The entire tri-level classificatory scheme of determining medical necessity is both taxonomic and comparative in nature. It is taxonomic in the sense that nurses gather data from various sources, which are then sorted into similar categories to distinguish likeness and delineate differences between and among them. It is comparative because the classificatory mechanism enables nurses to examine variables as they exist and affect each other in varying dimensions and perspectives.

5.2 Medical Necessity Determination Ontology

Based on this classificatory work tool, an Ontology for Determining Medical Necessity has been devised which illustrates the computational representation of this tool (Figure 2). This helps codify the procedure for programming purposes when used in the education, practice
procedure determineMedNecessity (patient)

assessPatientGenSafety (patient);
    obtain adequacy of care support and safety of home and patient
    [assess (adequacy_and_willingness_family_caregiver_support (patient))]
    ||
    [assess (safety of home environment and patient’s level of care needs (patient))]

    if PatientHasInadequateCareSupport (patient) then
        recordFindings (patient);
    end procedure

    if PatientIsUnsafe (patient) then
        recordFindings (patient);
    end procedure

    if PatientHasAdequateCareSupport AND PatientIsSafe (patient) then
        [assess (doComprehensivePatientAssessment (patient))];
        consultPatientMedicalRecord (patient);
        performPhysicalExamination (patient);
        interviewPatientHistoryandPastPresentMedical (patient);

        while (AssessmentDataAvailable) do
            if DataRelevant (patient) then groupData;
            if DataIrrelevant (patient) then discardData;
            if DataValueQuestionable (patient) then setasideandstoreData;

        if AnalysisofDataRelevantisNursingDiagnosis then
            [assess (doPrioritizationNursingDiagnoses (patient))];

        if (NursingDiagnosesPrioritize) then
            [identify (allappropriateNursingInterventions (patient))];

        while (ListNursingInterventions) do
            if ObservationandAssessment then groupNursingInterventions;
            if TeachingandTraining then groupNursingInterventions;
            if SkilledProcedure then groupNursingInterventions;
            if ManagementofPlanofCare then groupNursingInterventions;
        determineDominantNursingInterventionsgroup (patient);
        determineMedicalNecessity (patient);
        recordFindings (patient);
    end procedure

Figure 2: Ontology of Medical Necessity Determination for Home Care Services
and research fields of nursing. This is also particularly instrumental when training new home care nurses gain the knowledge and expertise in qualifying clients for home care, defining their plan of care, and ascertaining the medical necessity of their home care requirements. This is also of value to experienced nurses in terms of navigating the essential components required in this three-tier process to improve their efficiency in accomplishing their nursing responsibilities.

This dynamic ontology describes transitions and processes. It can be one state or process at one time, or two or more concurrent activities (symbolized by two parallel lines, “||”), or one event results from the other (sequencing, symbolized by “;”), conditional (if-then relationships), iteration (while<condition>do), and other programming language and symbols (Jurisica, Mylopoulos & Yu, 1999, 486).

Going through the steps in the ontological process as illustrated in Figure 2, the nurse gathers specific data relating to the patient’s general safety. This includes the adequacy of care support and the safety of the client. These two activities are concurrent and are represented by the “||”. These two conditions should be satisfied – there is adequate support and the client is safe. If one or the other is not, the process halts.

Once this level is accomplished, the nurse then moves to the next phase – gathering, sorting, organizing, and analyzing data. Data that are relevant and useful are grouped and processed into pertinent nursing diagnoses. Those that are not are discarded or set aside. All nursing diagnoses are then prioritized, and relevant nursing interventions identified, listed and ranked.

Once the identification of the problems and solutions are completed, the nurse proceeds to the final step – grouping and establishing medical necessity for skill needs. All nursing actions and tasks that are listed to address specific problems are analyzed and classified into one of the four Medicare criteria for medical necessity.

Looking through this dynamic ontology, the sequential relationship of each step in the entire three-level classificatory process becomes clearer. A better understanding of the overall process of determining medical necessity is achieved with the use of this ontology.

6.0 Conclusions

Results of this exploratory study reiterate that classification is indeed the focal point of human informational activity. It proves that a classificatory work tool to ascertain medical necessity is an example of how knowledge organization concepts are global learning applications, as in the discipline of Nursing. Nurses may appear as men and women who provide physical and psychological ministration to the ill. But aside from the nursing process used as the problem-solving framework, nurses also apply classification concepts in their work. The nurse-respondents in this case study demonstrate the use of this tri-level classification system which can be helpful as a quick and easy guide when qualifying would-be home care clients for medically reasonable and necessary services.

Further research is recommended, such as replicating this study using more case study participants and with other home care nurses. Other variables can be taken into consideration, including the nurses’ education and years of experience and the type of insurance coverage that clients present with. Differences in education and experience among nurses might present obvious variations in results. Insurance payers differ in their service requirements which might also show divergence in research outcomes. These and other factors might have effects on this classificatory process and should be explored.
7.0 References


