Third Edition

NOC and NIC Linkages to NANDA-I and Clinical Conditions

Supporting Critical Reasoning and Quality Care

Marion Johnson • Sue Moorhead • Gloria Bulechek
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THE LANGUAGES

Nursing is striving to build a knowledge base that supports professional practice and improves the quality of care provided by nurses in a variety of settings across the health care continuum. This need for representation and classification of the knowledge base of nursing continues to be an issue for the profession (Kautz, Kuiper, Pesut, & Williams, 2006). Essential to this knowledge base is knowledge of nursing diagnoses, patient outcomes, and nursing interventions (Lavin, Meyers, & Ellis, 2007). Experience helps nurses gain expertise in nursing practice and clarify the relationships of problems, outcomes, and interventions in a specialty area or with a specific patient population. Today the Internet also serves as a resource for nurses seeking current professional practice information.

As early as 1969 Abdellah stated that nursing diagnoses were the foundation of nursing science (Abdellah, 1969). The need for uniform or standardized nursing languages (SNL) has been discussed in nursing literature for the past 35 years (Anderson, Keenan, & Jones, 2009; Bakken & Currie, 2011; Clancy, Delaney, Morrison, & Gunn, 2006; Dochterman & Jones, 2003; Fischetti, 2008; Gebbie & Lavin, 1975; Hunt, Sproat, & Kitzmiller, 2004; Jones, 1997; Keenan & Aquilino, 1998; Lunney, Delaney, Duffy, Moorhead, & Welton, 2005; Maas, 1985; McCloskey & Bulechek, 1994; McCormick, 1991; Muller-Staub, Needham, Odenbreit, Lavin, & Van Achterberg, 2007; Pesut, 2006; Zielstorff, 1994). A uniform nursing language serves several purposes, including the following:

- Provides a standard language to facilitate communication both among nurses and between nurses and other health care professionals, as well as the public
- Allows the collection and analysis of uniform information documenting nursing's contribution to patient care
- Facilitates the evaluation and improvement of nursing care through outcome evaluation
- Fosters the development of nursing knowledge to support the nursing process
- Supports the development of electronic clinical information systems and electronic health records
- Provides the concepts for electronic data warehouses for quality improvement initiatives and effectiveness research
- Provides information for the formulation of organizational and public policy concerning health and nursing care
- Facilitates teaching clinical reasoning skills to nursing students and novice nurses

The contribution of standardized languages to the practice and development of nursing is described in detail in the articles previously cited as well as in the books describing the Nursing Interventions Classification (Bulechek, Butcher, & Dochterman, 2008; Dochterman & Bulechek, 2004; McCloskey & Bulechek, 1992, 1996, 2000) and the Nursing Outcomes Classification (Johnson & Maas, 1997; Johnson, Maas, & Moorhead, 2000; Moorhead, Johnson, & Maas, 2004; Moorhead, Johnson, Maas, & Swanson, 2008).

This book illustrates linkages between three of the standardized languages recognized by the American Nurses Association (ANA): (1) the diagnoses developed by NANDA International (NANDA-I), (2) the interventions of the Nursing Interventions Classification (NIC), and (3) the outcomes of the Nursing Outcomes Classification (NOC). The provision of links between these classifications is a major advancement in facilitating the use of these standardized

nursing languages in practice, education, and research. The implementation of NANDA-I, NOC, and NIC (NNN) has also increased the practicality and efficiency of managing nursing data (Lavin, Avant, Craft-Rosenberg, Herdman, & Gebbie, 2004). Nurses are faced with complicated clinical situations where the interpretation of patient data is complex and diverse (Lunney, 2003) and is driven by the context of care (Levin, Lunney, & Krainovich-Miller, 2004). These linkages support the critical thinking and reasoning skills needed by nurses to care for patients with multiple chronic conditions. The link between the use of standardized nursing languages and critical thinking is well documented in the nursing literature (Bartlett et al., 2008; Bland et al., 2009; Farren, 2010; Fesler-Birch, 2005; Kautz et al., 2006, Lunney, 2003, 2006, 2009; Pesut & Herman, 1998, 1999; Simmons, Lanuza, Fonteyn, Hicks, & Holm, 2003). A review of the literature by Anderson and colleagues (2009) identified that NANDA-I, NIC, and NOC demonstrated the "strongest and most noteworthy patterns of sustainability" (p. 89). For the first time this book provides linkages of NOC and NIC to some common clinical conditions that nurses treat with other disciplines. For those unfamiliar with the languages, a brief overview of each classification follows.

NANDA International

The use of standardized nursing language began in the 1970s with the development of NANDA's diagnostic classification. A nursing diagnosis is "a clinical judgment about individual, family, or community responses to actual or potential health problems/life processes. A nursing diagnosis provides the basis for selection of nursing interventions to achieve outcomes for which the nurse is accountable" (NANDA International, 2009, p. 419). Nursing diagnoses describe actual, potential (is at risk for development), and health promotion needs. The elements of an actual NANDA-I diagnosis are the label, the definition of the diagnosis, the defining characteristics (signs and symptoms), and the related factors (causative or associated factors), as illustrated in Table 1-1. The elements of a potential diagnosis as defined by NANDA-I are the label, the definition, and the associated risk factors. The elements of a health promotion diagnosis are the label, definition, and defining characteristics; an exception to this is the *Readiness for Enhanced Resilience* that also includes related factors.

NANDA was established in 1973 when a group of nurses met in St. Louis, Missouri, and organized the first National Conference Group for the Classification of Nursing Diagnoses (Gebbie & Lavin, 1975). In 2002 the name of the organization was changed to NANDA International to better reflect the membership from multiple countries. NANDA International is a membership organization directed by an elected president and board of directors. The Diagnosis Development Committee (DDC) reviews new and refined diagnoses submitted by members and a taxonomy committee adds diagnoses to the taxonomic structure and refines the taxonomy. In 2009 the NANDA-I classification included 202 diagnoses; *Taxonomy II* was first published in 2003 with 13 domains and 36 classes. NANDA-I representatives, along with representatives from NIC and NOC, participated in the development of the *Taxonomy of Nursing Practice*,

TABLE 1-1 One Example of a NANDA-I Diagnosis

Self-Esteem, Situational Low—00120

From NANDA International. (2009). *Nursing diagnoses: Definitions and classification 2009-2011* (p. 193). West Sussex, United Kingdom: Wiley-Blackwell.

a unifying structure for the placement of diagnoses, interventions, and outcomes, published in 2003 (Dochterman & Jones, 2003). NANDA-I terminology has been translated into 15 languages and is used in 32 countries. The NANDA-I organization publishes a classification book every 3 years and sponsors the *International Journal of Nursing Terminologies and Classifications,* previously titled *Nursing Diagnosis: The Journal of Nursing Language and Classification.* More information about the organization and the classification can be found at *www.NANDA.org.*

NIC

Research to develop a vocabulary and classification of nursing interventions began in 1987 with the formation of a research team led by Joanne McCloskey (now Joanne Dochterman) and Gloria Bulechek at the University of Iowa. The team developed the Nursing Interventions Classification (NIC)—a comprehensive, standardized classification of nursing interventions, first published in 1992. Unlike a nursing diagnosis or patient outcome in which the focus of concern is the patient, the focus of concern with nursing interventions is nursing behavior—nursing actions that assist the patient to progress toward a desired outcome.

An intervention is defined as:

> *Any treatment, based upon clinical judgment and knowledge, that a nurse performs to enhance patient/client outcomes. Nursing interventions include both direct and indirect care; those aimed at individuals, families, and the community; and those for nurse-initiated, physician-initiated and other provider-initiated treatments (Bulechek, Butcher, & Dochterman, 2008, p. xxii).*

Each NIC intervention consists of a label name, a definition, a set of activities that indicate the actions and principles constituting the delivery of the intervention, and a short list of background readings, as illustrated in Table 1-2. The intervention label name and the definition are the content of the intervention that is standardized and should not be changed when NIC is used to document care. Care can be individualized, however, through the choice of activities. From a list of approximately 10 to 30 activities per intervention, the nurse selects the activities most appropriate for the specific individual, family, or community. The nurse can add new activities if needed; however, all modifications and additions should be congruent with the definition of the intervention.

The NIC is continually updated and has been published in five editions; the 2008 edition contains 542 interventions and more than 12,000 activities. The interventions are grouped for ease of use into 30 classes and 7 domains to create the taxonomy for the classification. NIC can be used in all settings (from intensive care units to home care, hospice care, and primary care settings) and in all specialties (from pediatrics and obstetrics to cardiology and gerontology). Although the entire classification describes the domain of nursing, some of the interventions can be provided by other disciplines. Health care providers other than nurses are welcome to use NIC to describe their treatments.

The classification book as well as multiple other publications cited in this book document the years of research required to develop and test the classification and its taxonomic structure. NIC interventions have been linked to NANDA-I diagnoses, to Omaha System problems, to the Resident Assessment Instrument used in long-term care facilities, to OASIS (Outcome and Assessment Information Set) categories for home health care, and to NOC outcomes. The NIC classification has been translated into nine languages. The classification is continually updated through an ongoing process of feedback and review from users. Review work is conducted between editions of the NIC book and new interventions are developed and added from those submitted. A list of publications are available from the Center for Nursing Classification and Clinical Effectiveness at The University of Iowa, College of Nursing, Iowa City, IA 52242. Current information is available at *www.nursing.uiowa.edu/cnc.*

NOC

In 1991 a research team, led by Marion and Meridean Maas, was formed at the University of Iowa to develop a classification of patient outcomes correlated with nursing care. The work of the research team resulted in the Nursing Outcomes Classification (NOC)—a comprehensive, standardized classification of patient outcomes that can be used to evaluate the results of nursing interventions, first published in 1997.

Patient outcomes serve as the criteria against which to judge the success of a nursing intervention.

TABLE 1-2 One Example of a NIC Intervention

Self-Esteem Enhancement—5400

DEFINITION: Assisting a patient to increase his/her personal judgment of self-worth

Activities

Monitor patient's statements of self-worth
Determine patient's locus of control
Determine patient's confidence in own judgment
Encourage patient to identify strengths
Encourage eye contact in communicating with others
Reinforce the personal strengths that patient identifies
Provide experiences that increase patient's autonomy, as appropriate
Assist patient to identify positive responses from others
Refrain from negatively criticizing
Refrain from teasing
Convey confidence in patient's ability to handle situation
Assist in setting realistic goals to achieve higher self-esteem
Assist patient to accept dependence on others, as appropriate
Assist patient to reexamine negative perceptions of self
Encourage increased responsibility for self, as appropriate
Assist patient to identify the impact of peer group on feelings of self-worth
Explore previous achievements of success
Explore reasons for self-criticism or guilt
Encourage the patient to evaluate own behavior
Encourage patient to accept new challenges
Reward or praise patient's progress toward reaching goals
Facilitate an environment and activities that will increase self-esteem
Assist patient to identify significance of culture, religion, race, gender, and age on self-esteem
Instruct parents on the importance of their interest and support in their children's development of a positive self-concept
Instruct parents to set clear expectations and to define limits with their children
Teach parents to recognize children's accomplishments
Monitor frequency of self-negating verbalizations
Monitor lack of follow-through in goal attainment
Monitor levels of self-esteem over time, as appropriate
Make positive statements about patient

From Bulechek, G., Butcher, H., & Dochterman, J. (Eds.). (2008). *Nursing interventions classification (NIC)* (5th ed., pp. 641–642). St. Louis: Mosby Elsevier.
1st edition 1992

BACKGROUND READINGS

Bunten, D. (2001). Normal changes with aging. In M. L. Maas, K. C. Buckwalter, M. D. Hardy, T. Tripp-Reimer, M. G. Titler, & J. P. Specht (Eds.), *Nursing care of older adults: Diagnoses, outcomes, & interventions* (p. 519). St. Louis: Mosby.
Byers, P. H. (1990). Enhancing the self-esteem of inpatient alcoholics. *Issues in Mental Health Nursing, 11*(4), 337–346.
Luckmann, J., & Sorensen, K. C. (1987). *Medical-surgical nursing* (3rd ed.). Philadelphia: W. B. Saunders.
Norris, J., & Kunes-Connell, M. (1985). Self-esteem disturbance. *Nursing Clinics of North America, 20*(4), 745–761.
Reasoner, R. W. (1983). Enhancement of self-esteem in children and adolescents. *Family and Community Health, 6*(2), 51–63.
Whall, A. L., & Parent, C. J. (1991). Self-esteem disturbance. In M. Maas, K. Buckwalter, & M. Hardy (Eds.), *Nursing diagnosis and interventions for the elderly* (pp. 480–488). Redwood City, CA: Addison-Wesley.

An outcome is defined as "an individual, family, or community state, behavior, or perception that is measured along a continuum in response to a nursing intervention(s)" (Moorhead et al., 2008, p. 30). It is recognized that a number of variables, in addition to the intervention, influence patient outcomes. These variables range from the process used in providing the care, including the actions of other health care providers; to organizational and environmental variables that influence how interventions are selected and provided; to patient characteristics, including the patient's physical and emotional health, as well as the life circumstances experienced by the patient. Because the outcomes describe the status of the patient, other disciplines may find them useful for the evaluation of their interventions.

Each NOC outcome has a label name, a definition, a list of indicators to evaluate patient status in relation to the outcome, a five-point Likert scale to measure patient status, and a short list of references used in the development of the outcome, as illustrated in Table 1-3. The scales allow measurement of the outcome status at any point on a continuum from most negative to most positive, as well as identification of changes in patient status at different points in time. In contrast to the information provided by a goal statement, that is, whether or not a goal is met, NOC outcomes can be used to monitor progress, or lack of progress, throughout an episode of care and across different care settings. The outcomes have been developed to be used in all settings, all specialties, and across the care continuum. The fourth edition of the classification published in 2008 contained 385 outcomes grouped into 33 classes and 7 domains for ease of use. The classification is continually updated to include new outcomes and to revise older outcomes based on new research or user feedback.

The NOC classification books and numerous other publications document the extensive research to develop and validate NOC. The outcomes have been linked to: NANDA-I diagnoses, Omaha System problems, Gordon's functional patterns, the Long-Term Care Minimum Data Set, the Resident Assessment Instrument used in long-term care facilities, and to NIC interventions. The NOC classification has been translated into 10 languages and is experiencing growing use across the United States and worldwide. Current information about NOC is available on the Center for Nursing Classification and Clinical Effectiveness web page: *www.nursing.uiowa.edu/cnc.*

DEVELOPMENT OF THE LINKAGES

Part II of the book links NANDA-I diagnoses, NOC outcomes, and NIC interventions. The work represents the judgment of selected members of the NIC and NOC research teams, including academicians, clinicians, and students. Data collected during the evaluation of NOC outcomes in clinical sites were used when available. The data showed aggregated links between NOC outcomes, NIC interventions, and NANDA-I diagnoses based on clinician's selections for individual patients. The aggregated data provided information about the outcomes and interventions clinicians select for nursing diagnoses that served as a resource to compare clinical decisions and expert opinion for some of the diagnoses. *However, it is important to recognize that the linkages in this book are not intended to be prescriptive and do not replace the clinical judgment of the nurse.* In addition to the linkages provided in this book, users may select other outcomes and interventions for a particular diagnosis for an individual patient. The linkages presented here illustrate how three distinct nursing languages can be connected and used together when planning care for an individual patient or a group of patients.

Description of the Linkages

The linkages in this book are between the NANDA-I diagnoses, the NIC interventions, and the NOC outcomes. A linkage can be defined as that which directs the relationship or association of concepts. The links between the NANDA-I diagnoses and the NOC outcomes suggest the relationships between the patient's problem or current status and those aspects of the problem or status that are expected to be resolved or improved by one or more interventions. The links between the NANDA-I diagnoses and the NIC interventions suggest the relationship between the patient's problem and the nursing actions that will resolve or diminish the problem. The links between the NOC outcomes and the NIC interventions suggest a similar relationship focused on the resolution of a problem and the nursing actions directed at problem resolution, that is, the outcome that the intervention(s) (are) expected to influence.

TABLE 1-3 One Example of a NOC Outcome

Self-Esteem—1205

	Never Positive	Rarely Positive	Sometimes Positive	Often Positive	Consistently Positive	
Self-Esteem Overall Rating	**1**	**2**	**3**	**4**	**5**	
Indicators:						
120501 Verbalizations of self-acceptance	1	2	3	4	5	NA
120502 Acceptance of self-limitations	1	2	3	4	5	NA
120503 Maintenance of erect posture	1	2	3	4	5	NA
120504 Maintenance of eye contact	1	2	3	4	5	NA
120505 Description of self	1	2	3	4	5	NA
120506 Regard for others	1	2	3	4	5	NA
120507 Open communication	1	2	3	4	5	NA
120508 Fulfillment of personally significant roles	1	2	3	4	5	NA
120509 Maintenance of grooming and hygiene	1	2	3	4	5	NA
120510 Balance of participation and listening in groups	1	2	3	4	5	NA
120511 Confidence level	1	2	3	4	5	NA
120512 Acceptance of compliments from others	1	2	3	4	5	NA
120513 Expected response from others	1	2	3	4	5	NA
120514 Acceptance of constructive criticism	1	2	3	4	5	NA
120515 Willingness to confront others	1	2	3	4	5	NA
120521 Description of success in work	1	2	3	4	5	NA
120522 Description of success in school	1	2	3	4	5	NA
120517 Description of success in social groups	1	2	3	4	5	NA
120518 Description of pride in self	1	2	3	4	5	NA
120519 Feelings about self-worth	1	2	3	4	5	NA

From Moorhead, S., Johnson, M., Maas, M., & Swanson, E. (Eds.). (2008). *Nursing outcomes classification (NOC)* (4th ed., p. 638). St. Louis: Mosby Elsevier.

1st edition 1997; Revised 4th edition

OUTCOME CONTENT REFERENCES

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Roid, G., & Fitts, W. (1988). *Tennessee Self-Concept Scale: Revised manual*. Los Angeles: Western Psychological Services.

Rosenberg, M. (1965). *Society & adolescent self image*. Princeton, NJ: Princeton University Press.

Stanwyck, D. (1983). Self-esteem through the life span. *Family and Community Health, 6*(2), 11–28.

The concept names and definitions used in the linkages are those in the 2009-2011 edition of *NANDA International Nursing Diagnoses: Definitions & Classification* (2009), the fifth edition of *Nursing Interventions Classification (NIC)* (Bulechek et al., 2008), and the fourth edition of *Nursing Outcomes Classification (NOC)* (Moorhead et al., 2008). The NANDA-I diagnosis is the starting point for the linkages. The diagnoses are listed in alphabetical order except for the risk diagnoses, which are listed alphabetically following the other diagnoses. However, the NANDA-I diagnostic name has been reordered when the initial term does not specify the concept of concern in the diagnostic label; for example, *Ineffective Thermoregulation* is presented in these linkages as *Thermoregulation: Ineffective*. Listing the diagnostic concept before the modifier facilitates the ease with which a diagnosis can be located. Each diagnosis contains the diagnostic name and the definition. Suggested NOC outcomes with associated NIC interventions are provided for each diagnosis. The definition for each of the selected outcomes is provided in the linkage table and in Appendix A. The interventions are identified as major or suggested interventions for achieving each of the recommended outcomes for a particular diagnosis. The optional category of nursing inerventions, used in the previous two editions of this book, is not used in this edition of the linkages. Definitions of the NIC interventions used in the linkages are listed in Appendix B. The alphabetical ordering of the diagnoses does not reflect the taxonomic structure used by NANDA-I. Likewise, the taxonomic and coding structures of NIC and NOC are not reflected in these linkages. The current taxonomic structure for each of these languages can be found in the books describing each language.

Development of the Linkages to NANDA-I

Previous linkage work in the first edition, *Nursing Diagnoses, Outcomes, & Interventions: NANDA, NOC, and NIC Linkages* (Johnson, Bulechek, Dochterman, Maas, & Moorhead, 2001) and the second edition, *NANDA, NOC, and NIC Linkages: Nursing Diagnoses, Outcomes, and Interventions* (Johnson et al., 2006) provided the starting point for revising and updating the links in this third edition. Prior linkage work used for the first edition included the development of links between NANDA diagnoses and NIC interventions, NANDA diagnoses and NOC outcomes, and NIC interventions and NOC outcomes. Linkage work used for the current edition included the suggested outcomes for each NANDA-I diagnosis from the fourth edition of the *Nursing Outcomes Classification (NOC)* (Moorhead et al., 2008) and suggested interventions for each NANDA-I diagnosis in the fifth edition of the *Nursing Interventions Classification (NIC)* available online (Bulechek et al., 2008).

Third Edition Revision and Update

Linkages and methods developed for the first and second editions served as the basis for linkage revision in the third edition. The following steps were used to develop the current linkages:

1. Outcomes used in the second linkage book were compared with outcomes suggested for a diagnosis in the fourth edition of the NOC book (Moorhead et al., 2008). In many instances the outcomes in the second linkage book and the suggested outcomes in the current NOC book were the same. In other instances additional outcomes had been added to the list of suggested outcomes in the NOC book and these were added to the diagnosis in the linkage book. In a few instances some of the outcomes in the second linkage book were no longer on the suggested list in the current NOC book. Before these were removed, they were reviewed by all of the authors and sometimes the decision was made to retain them in the linkage book.
2. Interventions selected for each outcome in the second linkage book were reviewed against the interventions selected for the diagnosis in the current NIC book (Bulechek et al., 2008). Again, deletion or addition of interventions was based on author review and published linkages from other authors. The general tendency was to retain interventions rather than eliminate them. This provides more realistic options for clinicians when selecting interventions for patients of various ages and with diverse medical diagnoses and related problems.
3. Terminology for all three languages was updated to reflect changes in the editions used for each of the languages.
4. Formatting and technical changes were made in the linkages. To understand these changes carefully read the introductions to each section in Part II.

The final phase in the development of the linkages was second-level refinement. Because one person completed the initial links, it was important that others reviewed the linkage work. Reviewers were the other authors of this book and, in some instances, clinicians and graduate students with clinical expertise. Suggested changes were made in the linkages if there was agreement among the reviewers. If reviewer agreement was not reached, the suggested changes were presented to the authors for discussion and final decision.

The revision of linkages for this book required close scrutiny by the authors of previous and current linkage books. As a result, the linkages in this book, although similar to previously published linkage data, are not identical to the linkages found in this book's first or second edition or in the current editions of NIC and NOC. The decision to include or eliminate a particular outcome for a diagnosis based on the interventions recommended for that diagnosis was another source of controversy. For example, there were a few times when an outcome used in the linkage book was not linked to the diagnosis in the NOC book. This occurred if the appropriateness of the outcome became apparent when considering the interventions recommended for the diagnosis. Although rare, another difference occurred when not all of the interventions selected for a specific diagnosis in the NIC book were found in the linkage table. This transpired because not all possible outcomes that might be selected for a diagnosis are included in the linkage and some of the interventions would be more appropriate for the missing outcomes. Considering the number of diagnostic, outcome, and intervention linkages in this edition, the number of times there are significant differences between these linkages and those in the NOC and NIC books is minimal.

Clinical evaluation and testing of the linkages found in this book are needed. Clinical sites that use the three languages can aggregate and analyze data collected at their site to determine the outcomes and interventions selected for both nursing and medical diagnoses. The data can also be analyzed to determine which diagnoses, outcomes, and interventions are selected for patient populations delineated by age, medical diagnosis, or other parameters of interest. The linkages can also be tested in research studies that focus on selected patient populations or selected practice sites. Feedback from clinicians and others using the work will assist the authors to refine the linkages for future editions. Previous linkage books have been translated into five languages, increasing the opportunities for international reviews of the linkage work. This is important because there may be cultural differences in how these classifications are linked.

Development of the Linkages to Clinical Conditions

New to this edition is a section that focuses on linkages to common clinical conditions that are treated with other disciplines. We focused on high-frequency, high-cost conditions that can be identified either by medical diagnoses or by adverse events, which nurses attempt to prevent. Each condition has a short summary about the condition followed by NOC outcomes and NIC interventions commonly used when providing care for patients with these conditions. In this section NANDA International diagnoses are not used in the linkages because these interventions are closely related to the medical condition or serious complication. These linkages can be found in Part III.

CONCLUSION

NANDA-I, NIC, and NOC can be used together or separately. Together they represent the domain of nursing in all settings and specialties. They have been recognized by the American Nurses Association (ANA) and Health Level 7 (HL7, the electronic messaging standards' organization in the United States) and included in the National Library of Medicine's Metathesaurus for a Unified Medical Language System (UMLS), the Cumulative Index to Nursing Literature (CINAHL), and the Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT). Representatives from the three developing groups created the *Taxonomy of Nursing Practice* published by the American Nurses Association in 2003 (Dochterman & Jones, 2003). This common organizing structure should facilitate the use of all three languages. Multiple clinical agencies and educational settings across the United States and worldwide are using one or more of these nursing languages for the documentation of patient care and for the education of nursing students. In this book, we provide linkages between NOC outcomes and NIC interventions for NANDA-I diagnoses. Linking the three languages assists clinicians and students to select the outcomes and interventions most appropriate for the nursing diagnoses of their clients.

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Daniel Pink (2005) convincingly explains in *A Whole New Mind: Moving from the Information Age to the Conceptual Age* that we are entering a new age, an age that requires a new form of thinking. For nearly a century Western society in particular has been dominated by narrowly reductive and deeply analytical thinking, which has culminated in our current "information age." In the information age, it has been essential that nurses be what Peter Drucker (2001) named "knowledge workers," theoretical thinkers, as well as gleaners and managers of information. However, according to Pink (2005), the "conceptual age" is currently rising in place of the information age. The conceptual age requires "big picture thinkers" who are concept users, pattern recognizers, meaning makers, and relationship seers.

Similar to Pink, Howard Gardner (2006) in *Five Minds for the Future* asserts that in this age of accelerating globalization, mounting quantities of information, and the growing hegemony of science and technology, new ways of learning and thinking are required in education and the professions. In particular, Gardner (2006) identifies the "disciplined mind" as one of the five "new minds of the future." Disciplines represent a radically different view of phenomena and therefore constitute a distinctive way of thinking about the world. Gardner (2006) asserts that "it is essential for individuals in the future to think in ways that characterize the major disciplines" (p. 31). As a scientific, professional, and practice discipline, "nursing has a unique and distinctive content or knowledge base" (Butcher, 2004a, p. 73). Nursing classification systems not only identify the essential content of nursing but also provide a way of organizing and structuring nursing knowledge (Butcher, 2011). Nursing diagnoses, interventions, and outcomes—specifically *NANDA International Nursing Diagnoses: Definitions & Classification 2009-2011* (2009), the fifth edition of *Nursing Interventions Classification* (Bulechek, Butcher, & Dochterman, 2008), and the fourth edition of *Nursing Outcomes Classification* (Moorhead, Johnson, Maas, & Swanson, 2008), together referred to as NNN—provide the blueprint for "big picture" disciplinary thinking, as well as the structure and content for nursing knowledge development, care planning, and clinical decision making.

In addition to disciplinary thinking, Gardner (2006) identifies the "synthesizing mind" as the second essential way of thinking required for the future. The synthesizing is the ability to "knit together information from disparate sources into a coherent whole" (Gardner, 2006, p. 46). Gardner specifically identifies taxonomies, such as the nursing classification systems in this text, as an illustration of disciplinary knowledge synthesis. *The linkages between nursing diagnoses and clinical conditions, with nursing interventions and outcomes, are in essence a "synthesis of synthesis" integrating nursing knowledge into a cohesive whole. The linkages in this text provide a discipline-specific "conceptual roadmap" or blueprint for linking diagnoses, interventions, and outcomes that prepare nurses for "big picture" thinking in the emerging conceptual age.* The linkages can be used for designing evidence-based care for patient populations or for individual patients. They provide a standardized language that can be used in software development for electronic nursing information systems. The linkages can assist educators to teach clinical decision making and develop curricula and can be used by researchers to test nursing interventions, to evaluate the connections suggested in the linkages, and to develop mid-range theories.

A series of high-profile reports—*To Err Is Human: Building a Safer Health System* (Kohn, Corrigan, & Donaldson, 2000), *Crossing the Quality Chasm: A New*

Health System for the 21st Century (Institute of Medicine [IOM], 2001), *Keeping Patients Safe: Transforming the Work Environment of Nurses* (Page, 2003), and *Health Professions Education: A Bridge to Quality* (Greiner & Knebel, 2003)—have drawn considerable attention to significant problems related to the quality of care in the health care system. Chassin, Galvin, and the National Roundtable on Health Care Quality (1988) characterized "the burden of harm conveyed by the collective impact of our quality problems is staggering" (p. 1004). Quality is lacking in terms of providing care that is safe, effective, patient-centered, timely, efficient, and equitable (IOM, 2001). As a means to begin to address the challenge of preparing nurses with the knowledge, skills, and attitudes needed to improve quality and safety, the *Quality and Safety Education for Nurses (QSEN)* funded by the Robert Wood Johnson Foundation identified six competencies that can be used as a framework for *reforming* nursing education (Cronenwett et al., 2007). While some progress has been made in bridging the "quality chasm," a report by the Agency for Healthcare Research and Quality (AHRQ) concluded that although "the safety of health care has improved since 2000, more needs to be done" (AHRQ, 2008, p. 1). A vast majority of surveyed health care leaders believe that health care quality and efficiency will improve only with fundamental change. Nearly 9 out of 10 respondents to the latest Commonwealth Fund/Modern Healthcare Opinion Leaders Survey indicated the health care system needs radical system reform, with only 8% claiming that modest changes are all that is necessary (Kirchheimer, 2008).

Among the recommendations to bridge the health care "quality gap," the IOM (2001) identified a number of critical strategies designed to improve patient outcomes including: (1) evidence-based planned care, (2) computer-aided evidence-based clinical decision making, and (3) use of outcome measurements for continuous quality improvement. The use of the nursing classification systems and their linkages presented in this text not only describes the essential content of nursing diagnoses, interventions, and outcomes but also provides the means for achieving quality improvement by providing nursing content for the following goals: (1) designing nursing care; (2) developing computer-based information systems; (3) teaching and practicing clinical decision making; and (4) testing the effectiveness of interventions designed to achieve desired patient outcomes.

DESIGNING NURSING CARE

Nurses use a decision-making process to determine a nursing diagnosis, project a desired outcome, and select interventions to achieve the outcome. The linkages in this book are designed to assist nurses in making decisions about selecting the most appropriate interventions and outcomes for specific NANDA-I diagnoses and selected clinical conditions when planning care. It is important to keep in mind that the linkages are only guides; the nurse must continually evaluate the situation and adjust the diagnoses, outcomes, and interventions to match each patient's or population's unique needs. Thus the use of nursing taxonomies and their linkages is not a prescriptive formula and does not replace clinical decision making. Rather, the linkages provide possible choices and thus facilitate nursing judgments for designing care based on knowledge and understanding of each patient's unique situation, accurate interpretation of assessment information and data, and validation of assessment data with supporting evidence. In other words, nurses must use the linkages within the context of critical reasoning to ensure care is individualized, evidence-based, safe, and therapeutic. The use of suggested linkages does not alter the skills that nurses need and use in making decisions about patient care. "The skills the nurse must have to use the nursing process are: intellectual, interpersonal, and technical. Intellectual skills entail problem solving, critical thinking, and making nursing judgments" (Yura & Walsh, 1973, p. 69). When using the linkages, these intellectual skills are directed toward evaluating and selecting or rejecting the outcomes and interventions provided for each nursing diagnosis. Accurate nursing judgments lead to the effective designing of patient care. When the linkages presented in this book are used in conjunction with current nursing protocols, care plans, care maps, and evidence-based practice guidelines, then not only will nursing care be discipline-specific but also the use of NNN linkages will promote consistent documentation, evaluation, and communication of nursing practice in multiple settings and across disciplines.

The first clinical decision the nurse must make when using the linkages is to determine the nursing

diagnosis. There is general agreement that before a nursing diagnosis is determined, an assessment of the patient status must be done. Rubenfeld and Scheffer (1999) state that assessment includes both data collection and data analysis or, as they describe it, "finding clues" and "making sense of the clues" (p. 130). They detail a number of steps used in assessment that enable the nurse to draw conclusions about the patient's strengths and health concerns, that is, to make a diagnosis. They further suggest categorizing health concerns as (1) problems for referral (issues addressed by other health care providers), (2) interdisciplinary problems (issues addressed collaboratively with other providers), and (3) nursing diagnoses (issues addressed primarily by the nurse).

The diagnosis is used as the entry point for accessing the linkages. This is true when planning the care for one patient (an individual care plan) or for a group of patients (a critical path). However, identification of the nursing diagnosis for a group of patients requires an additional step: the collection and analysis of data to determine the diagnoses that occur most frequently and are important to address for the entire population. Once a nursing diagnosis is determined, the nurse can locate the diagnosis in the linkage tables and determine if any of the suggested outcomes are appropriate for the individual patient or patient group. When selecting the outcome, the nurse should consider the following factors: (1) the defining characteristics of the diagnosis, (2) the related factors of the diagnosis, (3) the patient characteristics that can affect outcome achievement, (4) the outcomes generally associated with the diagnosis, and (5) the preferences of the patient. It is important to note that the outcomes presented in the linkage work reflect a desired end-state outcome related to the patient state to be achieved. For example, the suggested outcomes for the diagnosis *Skin Integrity, Impaired,* include the following: *Allergic Response: Localized; Burn Healing; Tissue Integrity: Skin & Mucous Membranes; Wound Healing: Primary Intention;* and *Wound Healing: Secondary Intention.* These outcomes and their associated indictors can measure resolution of the defining characteristics and the overall diagnosis.

Outcomes that address the related factors, often etiological, antecedent, or associated factors in a NANDA-I diagnosis, must often be resolved before the actual end-state outcome is achieved. If the related factor is impaired circulation, the outcome *Circulation Status* might be selected; if the related factor is imbalanced nutritional state, the outcome *Nutritional Status, Nutritional Status: Nutrient Intake,* or one of the other measures of nutritional status might be selected. In other situations, selecting interventions to influence the related factors may be appropriate. If the related factor is mechanical, such as pressure, *Pressure Management* could be the intervention of choice; if the related factor is radiation, *Radiation Therapy Management* could be selected. Examples of outcomes selected by clinicians for seven NANDA-I diagnoses are reported in the literature with a discussion of some of the factors that might impact selection (Moorhead & Johnson, 2004).

After the outcome is selected, the nurse can consider the interventions suggested in the linkage work to assist in the selection of intervention(s) for the individual or group. The major interventions are the most closely related to both the diagnosis and the outcome and should be considered first. If the major intervention is not selected, consideration should be given to the suggested interventions. Bulechek and colleagues (2008) identify six factors to consider when selecting a nursing intervention. They are (1) the desired patient outcome, (2) the characteristics of the nursing diagnosis, (3) the research base associated with the intervention, (4) the feasibility of implementing the intervention, (5) the acceptability of the intervention to the patient, and (6) the capability of the nurse. In addition, estimates of time and education necessary to perform each intervention are provided. This information will be helpful to the nurse when selecting interventions for a particular patient (Bulechek et al., 2008). All of these factors should be considered when using the linkage work; the linkages can assist the nurse by suggesting interventions associated with both the outcome and the diagnosis, but cannot replace the nurse's judgment when selecting an intervention.

HEALTH INFORMATION TECHNOLOGIES

Computerized clinical information systems will become even more prevalent in health care organizations as the need to capture clinical data useful

for evaluation expands rapidly and plays an increasing role in achieving quality improvement. On February 17, 2009, President Barack Obama signed into law the American Recovery and Reinvestment Act of 2009 (ARRA), which contained provisions for stimulus expenditures related to health information technology, including more than $20 billion for the development and adoption of electronic record systems (Wilson, 2011). Nurses have a critical role in using information in a systematized, organized manner to increase the quality of care (Dickerson, 2011). Nurses have recognized the importance of computer information technology in collecting, documenting, and quantifying nursing's domain of care, and have accepted the significance of information technology (IT) in determining health outcomes impacted by nursing care (Wilson, 2011). McBride (2006) clearly described how information technology (IT) will assist in achieving the IOM's quality initiatives, including facilitating the ability of nurses to document and share information, to use online benchmarking and tracking of patient outcomes, and to employ IT to link nursing processes (such as interventions to outcomes). Computer information systems are being used to reduce errors by standardizing and automating decisions, and identifying errors. Online databases that include evidence-based practice protocols, care plans, and critical paths provide nurses and health care professionals quick access to a mass of knowledge designed to enhance clinical decision making. Electronic records have the potential to make a significant contribution to patient safety and to the quality, effectiveness, and efficiency of health care (Lee, 2011). Electronic health records allow health care providers to quickly access the latest patient information digitally across settings, providing for a more complete documentation of the patient's health information and potentially limiting the duplication of services. Computerized decision support systems aid in clinical decision making by providing access to best evidence-based guidelines at the point of care (Wilson, 2011). Health care purchasers and managed care entities rely on statistical information derived from these systems to determine how health care dollars will be allocated. As health care information systems expand, each discipline must identify the data elements required to evaluate the processes and outcomes of care.

Although the development of nursing information systems was identified as a high priority as early as 1988 (National Center for Nursing Research, 1988), the construction of systems that use standardized data elements remains in the early stages of development. "If nurses do not develop and adopt the tools needed to participate in this information-driven environment, opportunities to provide nursing services may significantly diminish in the future" (Jones, 1997, p. 377). Database development requires a common language and a standard way to organize data. Standardized nursing languages or terminologies are vital to the discipline of nurses because they provide consistent terms to communicate nursing knowledge. This minimizes the bias created when nurses use terminology based on their own mental models of care (Clancy, Delaney, Morrison, & Gunn, 2006). Furthermore, standardized nursing languages allow for the coding of nursing diagnoses, interventions, and outcomes to enable the capture, storage, retrieval, and transformation of nursing care information (Bakken & Currie, 2011). In an effort to advance nursing in preparation for the electronic patient record, the American Nurses Association (ANA) developed a set of standards for nursing data sets in information systems. Standards include those related to nomenclatures, clinical content linkages, the data repository, and general system requirements (American Nurses Association, 1997). The ANA recognizes the NANDA-I, NOC, and NIC vocabularies as approved nomenclatures. By organizing nursing information into meaningful categories of data for analysis, the NANDA-I/NOC/NIC linkages are the "building blocks" for electronic clinical information systems (Lang, 2008, p. 233). All three languages have been registered in HL7 (Health Level 7), the U.S. standards' organization for health care. They are all licensed for inclusion in SNOMED-CT (Systematized Nomenclature of Medicine-Clinical Terms), a comprehensive reference terminology that is poised to become the recognized reference terminology for health information exchanges of important sections of the electronic health record.

Nurses' documentation of the diagnoses they treat, the interventions used to treat the diagnoses, and the resulting outcome responses to interventions in computerized information systems is necessary for the

development of large local, regional, national, and international nursing databases (Iowa Intervention Project, 1997; Keenan & Aquilino, 1998). Large clinical databases are needed to assess nursing effectiveness, generate hypotheses for testing with controlled research designs, and refine the linkages among diagnoses, interventions, and outcomes based on clinical and research evidence. These database uses are essential for nursing knowledge development, for research-based practice, and to influence health policy. Busy clinicians, however, cannot afford the time to repeatedly sort through each standardized language in alphabetical form in a computerized system.

Five nursing-developed terminological sets that integrate nursing diagnoses, interventions, and outcomes are recognized by the American Nurses Association. The five nursing terminologies are Clinical Care Classification (CCC), International Classification on Nursing Practice (ICNP), Omaha System, Perioperative Nursing Data Set (PNDS), and NANDA-I/NIC/NOC (NNN). A systematic study of these five terminological sets indicates that because the Omaha System, PNDS, and the CCC systems are narrow in scope and non-comprehensive systems, they have significantly fewer publications and much smaller co-author publishing networks (Anderson, Keenan, & Jones, 2009). For example, articles focusing on the research, application, and implementation of NNN are found in 21 countries and 28 states while Omaha System classification is used in 5 countries and 16 states. The authors found NNN has more publications (journal articles, abstracts, books, book chapters, dissertations); in fact, NNN was used in 879 publications, as compared to a total of 261 publications for the other four terminology sets combined. Thus it is not surprising that NNN is the most common standardized terminology set used in health care information systems. The NANDA-I/NOC/NIC linkages presented in this book assist with the organization and structuring of nursing clinical information systems that are the most efficient for nurses' documentation of their practice. The taxonomies provide an organizing scheme for the arrangement of computer screens that eases clinicians' access for documentation. Likewise, the linkages offer greater efficiency by supplying groupings of diagnoses, interventions, and outcomes with a high probability of effective relationships for patient care. In a study evaluating the implementation, both teaching and application, of nursing diagnoses, interventions, and outcomes, Muller-Staub (2009) concluded that "the use of NNN in the electronic nursing documentation is recommended" and the use of NNN in practice "led to higher quality of nursing documentation" (pp. 14–15).

An exemplar that fuses information technology and NNN linkages is the work of the team led by Keenan to develop the Hands-on Automated Nursing Data System (HANDS), which is an extensively tested user-friendly clinical nursing information system with embedded NANDA-I/NIC/NOC linkages. Research testing the HANDS tool in homecare and ambulatory settings provided evidence to its reliability, sensitivity, and usefulness in planning and documenting care and achieving desired patient outcomes (Westra, Delaney, Konicek, & Keenan, 2008).

NNN linkages also offer some decision support. A review of the outcomes and interventions that experienced nurses selected for a diagnosis will help clinicians consider possible treatments and responses that might be overlooked in the context of hectic and demanding clinical decision making. This decision support is likely to be even more helpful to novice nurses, who also need clinical reasoning options available for review but often have difficulty identifying the critical and priority outcomes and interventions for a diagnosis. A detailed description of design, implementation, and application of nursing computerized information systems using NNN is discussed in Chapter 3.

CLINICAL REASONING AND DECISION MAKING

Quality improvement rests on the foundation of patient-centered, competent, and effective clinical reasoning and decision making. Clinical decision making is based on clinical reasoning, which includes the use of knowledge, experience, and critical thinking. Nursing decision-making models are the engines of nursing practice (Butcher, 2004b). Since the 1950s, the nursing process has provided the structure facilitating clinical reasoning. Initially the nursing process consisted of four steps—assessment, planning, intervention, and evaluation. In 1973 the American Nurses Association modified the four-step nursing process by adding diagnosis as the second step in the decision-making model, thereby establishing the five-step model—assessment, diagnosis, planning, intervention,

and evaluation (or **ADPIE**)—as a standard of nursing practice. The nursing process has been an organizing framework for professional nursing practice since the early 1960s. In the traditional nursing process, increasingly it has become standard practice to end the **A**ssessment process by identifying NANDA-I diagnoses in the **D**iagnostic phase; choosing relevant nursing-sensitive NOC outcomes and indicators when **P**lanning care for each diagnosis; selecting NIC interventions and activities for the **I**ntervention phase; and determining the changes in selected NOC indicators during **E**valuation. Thus NNN nursing languages provide the content or *knowledge* used in the nursing process.

Although the nursing process has demonstrated its usefulness as a clinical decision-making method, the traditional nursing process presents a number of limitations for contemporary nursing practice. Current nursing practice emphasizes knowing the patient's "story," thereby placing the patient's situation in a meaningful context and enabling creative and reflective thinking, theory-based practice, evidence-based practice, and consideration of desired patient outcomes. Pesut and Herman (1999) stated that the traditional nursing process does not explicitly focus on outcomes; instead, it deemphasizes reflective and concurrent creative thinking; is more procedure-oriented, rather than focused on the structures and processes of thinking; uses stepwise and linear thinking, which limits the relational thinking needed to understand the complex interconnections among the patient's presenting problems; and limits the development of the practice of relevant theory. In response to the need for a more contemporary model for clinical reasoning, Pesut and Herman developed the Outcome–Present State Test (OPT) model of reflective clinical reasoning. A significant strength of the OPT model is that it embraces a number of the types of thinking required in the emerging "conceptual age" or "big picture thinking" advocated by Pink (2005), including the emphasis on *story* or narrative, the use of *empathy* as a means to forge relationships through caring, and *symphony,* which is synthesizing elements into a whole.

The OPT model provides a major advancement in the teaching and practice of clinical decision making by using a clinical reasoning structure linking NANDA-I, NIC, and NOC. In fact, Pesut (2002) asserts "clinical thinking and reasoning presupposes the use of a standardized nursing language . . . nursing knowledge classification systems provide the vocabulary for clinical thinking" (p. 3). The OPT model advances quality improvement by providing a structure for clinical reasoning that focuses on outcomes by using a *synthesizing* or systems' thinking approach about the relationships among nursing care problems associated with a particular client *story*. Contrary to the traditional nursing process, the OPT model of reflective clinical reasoning provides a structure for clinical thinking with a focus on outcomes and is not a stepwise linear process. Clinical reasoning that focuses on outcomes enhances quality improvement by optimizing the evaluation of effectiveness rather than focusing primarily on problems. In the OPT model of clinical reasoning, the nurse simultaneously focuses on problems and outcomes by juxtapositions of both problems and outcomes at the same time. The model requires nurses to simultaneously consider relationships among diagnoses, interventions, and outcomes with attention to the evidence used to make judgments. Rather than considering one problem at a time, the OPT requires nurses to consider several identified problems simultaneously and to discern which problem or issue is central and most important in relationship with all the other problems.

The OPT model provides a structure linking NANDA-I, NIC, and NOC and is a major advancement in the development of nursing practice decision-making models. The model's emphasis on eliciting the patient's story, framing the story in a discipline-specific theoretical context, incorporating reflective thinking, emphasizing nursing outcomes, identifying relationships among nursing diagnoses, and specifying the keystone issue provides a distinct advantage over the traditional nursing process. As an emerging clinical decision-making model, the OPT model is a new way for teaching, learning, and practicing nursing content–based care.

Pink (2005) explains that stories are important because they capture and encapsulate the context for understanding the assessment information and scientific knowledge. The OPT model (Figure 2-1) begins by listening to the **client-in-context story.** The OPT model uses listening to the "client-in-context story" to gather important information regarding the context, major issues, and insights about the patient's situation. It is through the telling and listening to stories that patients reveal their

Figure 2-1 Integrating Outcome–Present State Test (OPT) model with NANDA, NIC, and NOC.

experiences and explore and make sense of the meaning of their health-illness experiences and that nurses learn about their patients' concerns, fears, hopes, and dreams. The story is not just expressed in words, but also in the silences, in what is not said, in the gaps between words, in the gestures or movements, and by the look in the eyes. Within the OPT model, assessing for the purpose of information gathering is replaced by attentively, empathetically, and compassionately listening to the patient's story, thereby extending diagnostic listening and privileging the person receiving care by attaining a fuller understanding of the patient's concerns. Attentive listening to the patient's story in context also can facilitate forming healing nurse-patient partnerships, meeting the patient's real concerns, and assisting the patient's ability to find meaning in the situation.

Client stories are complex and require "big picture thinking" using analysis and synthesis. To facilitate analysis and synthesis of the client story, Pesut and Herman (1999) suggest the use of a "clinical reasoning web" worksheet, which is a pictorial representation of the functional relationships among the NANDA-I diagnoses describing the present state. Examining the relationships among the NANDA-I diagnoses using systems' thinking and synthesis enables nurses to identify the "keystone" issue. The keystone issue is the one or more diagnoses that are central to the patient's story and that support a majority of the other nursing diagnoses (Figure 2-2). In the clinical reasoning web worksheet, the diagnosis that has more relationships to other diagnoses (acute pain) will often be the keystone or priority nursing diagnosis. Keystone issues guide clinical reasoning by identifying the central NANDA-I diagnosis that needs to be addressed first and also contribute to **framing** the reasoning process. As the nurse elicits the client's story and constructs the clinical reasoning web, the theoretical framing of the story and relationships among

Figure 2-2 Sample clinical reasoning web.

diagnoses is elicited through the use of a mental model that gives meaning, language, clarity, and a way of organizing the information that is relevant to understanding the client's situation.

Framing an event, problem, or situation is analogous to using a lens through which one views and interprets the patient's story. The story may be framed by a specific nursing theory, a particular model, a developmental perspective, or a set of policies and procedures. Framing the patient's story by a particular nursing theory enables the nurse to "think nursing" rather than to think through a nonnursing perspective (e.g., medicine, psychology, or sociology) (Butcher, 2011). Framing the client's story helps the nurse focus on relevant information of the client's situation, guide the selection of relevant questions, organize the information gathered in a meaningful way, and provide a scientific understanding and rationale regarding why and how the client's concerns will be addressed.

Cue-logic is the deliberate structuring of the client-in-context data to discern the meaning for nursing care. Clinical evidence about the client-in-context is processed according to the nurse's cue-logic. Cue-logic via nursing theory contributes information that helps structure, or "frame," the particular situation. Cue-logic is also informed by memories or schema searches, that is, by patterns of past experiences that might be applied to the current situation. At the same time the nurse uses **reflection,** which is the process of observing oneself while simultaneously thinking about client situations. The goal of reflection is to achieve the best possible thought processes. Incorporating the ideas on guided reflective nursing practice according to Johns (2000, 2001) may be used to expand upon the original description of reflection by Pesut and Herman (1999). Reflective practice is a method of gaining access to a better understanding of the care experience, thereby enabling practitioners to develop

increasing effectiveness of personal actions within the context of their work. Reflection during clinical decision making involves thinking about what you are doing while you are doing it by asking consciously or subconsciously questions such as the following (Johns, 1996): (1) What am I noticing here and what does it mean? (2) What judgment am I making and by what criteria? (3) What am I doing and why? (4) Is there an alternative course of action other than the one I am taking? The greater the reflection, the higher the quality of care delivered. As the nurse alternates between the client's story and the cue-logic guided by the particular frame that attributes meaning to the connections among the cues, the patient's present state or situation takes shape.

The **present state** is the description of the patient in context, or the initial condition. The present state will change with time as a result of both the nursing care and the changes in the nature of the patient's situation. The issues describing the present state may be organized by identifying the nursing diagnoses using the NANDA-I taxonomy (NANDA-I, 2009). NANDA-I diagnoses provide a structure and give meaning to the cues. Pesut and Herman (1999) describe in detail how the nurse creates a "clinical reasoning web" to describe the present state by identifying the relationship among and between the NANDA-I diagnoses associated with the patient's health condition. Informed by nursing knowledge and/or by the patient's direction, the outcomes are identified that indicate the client's desired condition. NOC outcomes (Moorhead et al., 2008) provide the means to determine the **outcome state** and are identified by juxtaposing, or making a side-by-side comparison, a specified outcome state with present state data. NOC outcomes are a state, behavior, or perception that is measured along a continuum in response to a nursing intervention. Each outcome has a group of indicators that are used to determine patient status in relation to the outcome. Therefore the indicators are more concrete and are measured along a 5-point Likert scale. There are currently 385 NOC outcomes, each with approximately 5 to 15 indicators. **Testing** is the process of thinking about how the gaps between the present state (NANDA-I diagnoses) and the desired state (NOC nursing-sensitive outcomes) will be filled. While testing, the nurse juxtaposes the present state and outcome state while considering the NIC interventions that can be used to bridge the gap.

Decision making is the process of selecting and implementing the specific nursing interventions. The nurse identifies nursing interventions and the specific nursing actions that will help patients reach their desired outcomes. The taxonomy of NIC interventions (Bulechek et al., 2008) will facilitate the identification of standardized nursing interventions that are chosen based on their ability to help transition patients from problem states to more desirable outcome states. There are currently 542 NIC interventions. The following six factors discussed earlier in this chapter will facilitate the appropriate selection of an effective intervention: (1) desired patient outcomes (NOC); (2) characteristics of the nursing diagnoses (NANDA-I); (3) research base for the intervention; (4) feasibility for performing the intervention; (5) acceptability of the intervention to the patient; and (6) capability of the nurse. The nurse individualizes nursing care by selecting and implementing the specific nursing activities for each NIC intervention.

Judgment is the process of drawing conclusions based on actions taken. For example, the nurse may ask the following questions: How has the patient's present state changed based on the interventions? Does the present state now match the desired outcome state? The indicators for each of the NOC nursing-sensitive outcomes selected may be used to make judgments about the degree to which the desired state outcome achievement is met. A thinking strategy that supports judgment is reframing or attributing a different meaning to the acts and evidence. Judgments result in reflection and conclusions about the degree of match between the patient's present state and the outcome state. In addition, reflection about the entire process results in self-correction and contributes to the development of a schema for use with decision making in future similar patient situations. A reflection check involves the processes of self-monitoring, self-correcting, self-reinforcing, and self-evaluation of one's thinking about the task or situation.

Critical thinking is central to any clinical reasoning process, whether using the nursing process or the OPT model. Scheffer and Rubenfeld (2000) described critical thinking in nursing as consisting of a set of 7 cognitive skills and 10 interrelated "habits of mind." Cognitive skills include analyzing, applying

standards, discriminating, information seeking, logical reasoning, predicting, and transforming knowledge; and habits of mind or intelligent nursing attributes include confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Applying the NNN linkages presented in this text in teaching and practice enhances critical thinking because the linkages serve as a major enhancement of cognitive skills, particularly for applying standards, discriminating, and transforming knowledge.

Case studies and computer simulations have been developed based on the linkages in this book and appear in previous editions and increasingly in nursing textbooks. Faculty teaching clinical decision making can use the linkages to develop their own case studies and simulations. Discussion of cases can focus on the adequacy of the diagnosis selected to address the problem, the appropriateness of the outcomes and interventions selected, the rationale for their selection, and the identification of other outcomes or interventions that might be more appropriate in a given situation. A database with the linkages can be made available for students to use when planning care for a patient or a group of patients. Students can use the linkages to evaluate the relationship between the patient's signs and symptoms, the defining characteristics and related factors of the diagnosis, the outcome and its indicators, and the intervention and its activities. They can select the outcome indicators and intervention activities for a patient based on the patient's status and the elements of the nursing diagnosis.

The linkages will facilitate the teaching of clinical decision making through the application of teaching strategies such as the Outcome-Present State Test (OPT) model (Pesut & Herman, 1999). The linkages can be used in conjunction with the three languages (NANDA-I, NOC, and NIC) to assist students in developing the skills necessary for clinical decision making. Kautz and colleagues (2006) have conducted extensive research into the teaching of clinical reasoning using the NNN-standardized nursing languages within the OPT model. They note the many strengths in teaching clinical reasoning using NNN within the OPT model and request faculty to use NNN "linkage resources" with students. The researchers noted "that students who consistently used NNN language with the OPT model were the students who performed well in the clinical area and did better in completing their clinical reasoning webs" (Kautz et al., 2006, p. 137). Thus the linkages in this text can serve as a major resource in the teaching of clinical reasoning, whether using the OPT model or the traditional nursing process.

The linkages also can be used in planning content for the curriculum. They can assist the faculty in selecting a body of content and distributing the content among the various courses. The linkages between diagnoses, outcomes, and interventions can be a starting point to identify a body of content related to the nursing diagnoses and to determine when the content will be taught in the curriculum. For example, the faculty may choose to teach content related to the diagnosis *Anxiety* and the outcome *Anxiety Control*. Although these concepts may be covered in a number of courses, the interventions might be most appropriately distributed among courses. For example, *Active Listening, Calming Technique,* and *Exercise Promotion* might be presented early in the curriculum whereas *Hypnosis, Guided Imagery,* and *Therapeutic Touch* might be presented later in the curriculum or even in a graduate program. A publication describing a method to implement the three languages in an undergraduate curriculum (Finesilver & Metzler, 2002) is available through the Center for Nursing Classification and Clinical Effectiveness at the University of Iowa, College of Nursing.

There are a number of advantages to using NANDA-I/NOC/NIC vocabularies and linkages in a nursing curriculum. The vocabularies are comprehensive and can be used for patients across the continuum of care and in all settings in which care is provided. The terminology is useful for nurses in all nursing specialties and in various nursing roles. This makes the vocabularies and associated linkage work useful in both undergraduate and graduate curricula. As the electronic patient record becomes a reality, the use of standardized languages in the care setting will become commonplace and should be introduced to student nurses.

RESEARCH AND KNOWLEDGE DEVELOPMENT

Nursing classification systems—specifically nursing diagnoses (NANDA-I, 2009), nursing interventions classification (Bulechek et al., 2008), and nursing

outcomes classification (Moorhead et al., 2008)—serve as *the* sources for knowledge development and provide the language of the nursing discipline (Butcher, 2011). NANDA-I/NIC/NOC (NNN) provides the concepts and language that enable nurses to work collaboratively with persons, families, communities, and members of other disciplines. Clark and Lang (1992) noted the importance of nursing taxonomies when stating, "If we cannot name it, we cannot control it, finance it, teach it, research it, or put it into public policy" (p. 27). Developments in the structure of nursing knowledge (NANDA-I/NIC/NOC) hold great promise for capturing the mid-range theories within a thorough and extensive framework of nursing knowledge. The taxonomies of nursing diagnoses, interventions, and outcomes and their linkages provide a full skeletal framework for nursing knowledge. In other words, the NNN linkages organize the substance of the discipline (Butcher, 2011). Professional practice languages and classification systems are the fundamental categories of thought that define a profession and its scope of practice. Although the nursing profession has made considerable progress in developing languages and classification systems, there is a need to use the languages to promote knowledge development. It is hoped that these linkages will suggest questions for study, including comparisons of the various languages currently used in nursing.

The development of nursing knowledge requires evaluation of the effectiveness of various nursing interventions and the appropriateness of the decision-making process in selecting interventions to resolve a diagnosis or to achieve a particular outcome. Kautz and Van Horn (2008) have cogently illustrated how NNN languages can be used in developing evidence-based practice guidelines for guiding practice and conducting research and conclude in asserting that "the use and continued development of uniform, standardized language capture the essence of nursing practice and help advance nursing knowledge in addition to providing the appropriate framework for evidence based practice" (p. 18).

Coherence among diagnoses, interventions, and outcomes displayed as evidence-based linkages is crucial to ensuring quality improvement and safety. The linkage work contained in this book provides numerous relationships that require testing and evaluation in a clinical setting. Questions about which of the suggested interventions achieve the best outcome for a particular diagnosis, which of the outcomes are most achievable for a particular patient population, and which diagnoses and interventions are associated with specific medical diagnoses are just a sample of the questions that can be addressed. Studies, such as the one by Peters (2000), test the use of the outcomes and interventions with specific patient populations and add to the body of knowledge.

As well as studying the relationships between interventions and outcomes, the relationships among the environment, the structure of the health care organization, the processes of care, and patient outcomes need to be studied. Without these types of data, organizations have little information on which to adjust staff mix or determine the cost-effectiveness of structural or process changes in the nursing care delivery system. Issues related to the study of organizational factors that influence patient outcomes have gained increased emphasis in recent years.

Identification of patient factors that influence outcome attainment, referred to as risk factors, is another area that needs to be studied to carry out effectiveness research related to nursing interventions. Personal factors need to be identified to reduce or remove the effects of confounding factors in studies where the cases are not randomly assigned to different treatments, as is typical in most effectiveness research (Iezzoni, 1997). Identification of the personal factors that influence outcome achievement for a particular diagnosis or the effectiveness of an intervention for patients with varying personal characteristics and life circumstances will add to the body of nursing knowledge and allow nurses to provide the highest quality care possible. As effectiveness research and evidence-based practice gain momentum in nursing, both organizational and personal factors that need to be considered in the analysis of data are being identified in the literature (Johnson, 2002; Titler, Dochterman, & Reed, 2004).

CONCLUSION

The linkages provided in this text prepare nurses for the emerging conceptual age and are foundational to designing care, using computer-based electronic health care systems, teaching and practicing evidence-based clinical decision making, and developing and researching nursing's disciplinary knowledge. All four of these functions serve to enhance the safety and quality of nursing care. The public demands, requires, and deserves nothing less.

A number of hospitals and health care settings have developed nursing computerized information systems (CIS) and many more are developing CIS in response to available technology and the emergence of electronic health records (EHR). Many CIS, however, do not include standardized nursing nomenclatures. Furthermore, among those that do include standardized nursing terminologies, many systems are not designed to advantage the retrieval of nursing data for the development of nursing data repositories or warehouses. These data are necessary for the creation of useful reports for clinicians, nurse managers, and nurse executives. The result is that electronic clinical nursing practice data are minimally available in the United States for analyses that would benefit nursing, hospitals, and patients. This also impacts the type of information that can be shared as the patient moves among care settings and providers in the health care system.

When standardized nursing terminologies are not used, nurses cannot clearly and consistently communicate the meanings of the concepts they use with one another, with members of other disciplines, and with consumers. Furthermore, without standardized nursing terminologies electronic nursing data cannot be shared efficiently and directly with other settings. Most importantly, when standardized nursing terms for documenting nursing care are not used and therefore cannot be electronically retrieved, nursing data are not available to evaluate the quality of care. When the CIS is properly designed with standardized nursing terminologies, quality indicators can be downloaded directly from documented nursing practice data. Without the ability to electronically retrieve standardized nursing practice data, nursing data will not be included in large national EHR datasets that are analyzed to describe nursing contributions to health care and are used to inform policy makers.

Too often the main concern in CIS development is that nurses document the implementation of physician orders, actions for which there is a charge to the consumer, and other externally mandated data, such as national quality indicators, while limiting and compromising the documentation of meaningful nursing care data. Consequently, in many settings nursing electronic documentation does not truly represent the knowledge-based nursing care provided to patients and families that contributes to the quality of health care received by patients in our health care system. Furthermore, the development of many EHR systems continues to emphasize the documentation of nursing care plans and care delivered, but neglects standards to ensure that data are easily retrievable. Inattention to planning for data retrieval and data warehousing early in CIS development is a serious constraint on the use of electronic clinical nursing data. Because of this constraint, nursing data are not used to inform optimal decisions and quality evaluations by nursing administrators and clinicians; to support the ongoing development of nursing science and best practices; and to make local and national policy makers aware of the contributions and effectiveness of nursing care in providing health care to citizens (Barton, 1994). To enable these important uses of information generated by nursing CIS data, standardized nursing data must be retrieved and stored in common information tables within electronic data repositories and warehouses so that the data can be analyzed to answer specific queries.

This chapter outlines the characteristics of nursing CIS data that are required for clear representation, communication, and use of electronic nursing practice data. The development of data repositories and warehouses for the analysis of nursing data is described. Issues that constrain the retrieval of electronic nursing data and the development of data

Table 1. Patients

Figure 3-1 Illustration of relational database tables.

applied to the reference model. Furthermore, no nursing reference information model (RIM) is yet operational. Mapping of terms is highly time-consuming and may not be possible with a large dataset. This issue underscores the folly of the use of nonstandardized terms—it either partially or completely compromises the analysis and reporting of nursing care and its effectiveness. Use of nonstandardized terms limits the interoperability of data across settings and the development of large, multiorganizational datasets.

A third issue is that nursing CIS designs are frequently not fully integrated in regard to (1) one to one linkages of nursing-sensitive outcomes to specific

answer nursing effectiveness questions and the retrievability of these data.

The second lesson learned was that nursing data that can be retrieved have more limitations than anticipated. It was not a surprise that the clinical data documented by practicing nurses was less rigorous than the data collected specifically for a research study. The amount of time spent documenting; the nurses' knowledge of the standardized languages; and the accuracy of nursing diagnoses, interventions, and patient outcomes all affect the quality of clinical data (Head et al., 2010). These limitations can be partially reduced, as they were by the three clinical sites, by ensuring adequate ongoing education about the use of standardized nursing terminologies for clinical decision making and its application to the documentation system (Head et al., in press). A surprising lesson, however, was the difference between the documented care actually delivered versus the documented care planned in some systems. Many systems use flow sheet type charting for the actual care provided and have a separate module for the care plan. This was true in two of the three study hospitals. When NANDA-I, NIC, and NOC only existed in the care plan module and were not linked to the documentation of actual care provided, the data retrieved for evaluating care might not be a true reflection of the care delivered (Head et al., in press). The need for nurses and vendors to understand the importance of integrating the documentation of care planned and the documentation of care delivered using standardized nursing nomenclatures as well as the importance of designing decision support mechanisms that will enable simultaneous updating of both types of documentation is a lesson that cannot be ignored if nursing data are to be used to evaluate the effectiveness of nursing care.

Linkages between the nursing diagnoses, interventions, and outcomes data in the CIS were also not operationalized in all of the study hospitals. In the pilot study, the linkages were not necessary because the purpose was to describe the ten most frequently documented nursing diagnoses, interventions, and outcomes. It was clear to the researchers, however, that future nursing effectiveness research was severely limited without electronic linkages of a nursing diagnosis with a specific patient outcome(s) and a specific nursing intervention(s) used to treat the diagnosis and achieve a desired outcome(s).

The pilot study demonstrated the ability to obtain most of the variables necessary for larger nursing effectiveness studies. Some variables, however, were not available or were very difficult to obtain, and critical limitations of the CIS nursing data were revealed. The lessons learned about data retrieval and necessary linkages among CIS nursing data will help researchers develop a data warehouse and prepare for future studies. The lessons learned from the pilot study should also convince nurses in all settings to heed the following recommendations in order to make electronic nursing clinical data most advantageous both for nurses and for their patients.

RECOMMENDATIONS FOR ADDRESSING ISSUES THAT CONSTRAIN RETRIEVAL AND WAREHOUSING OF NURSING DATA

Nurses' lack of knowledge regarding the role of nursing classifications in the development of the knowledge base of the discipline and regarding CIS and data warehouse development is a fundamental, significant issue. Unlike disciplines that have a more mature science supporting their scholarship and practice, the curriculum in many nursing programs is not anchored in a standardized set of concepts that are the basis of their science. For example, every undergraduate student of chemistry immediately encounters the periodic table of the elements and first-year medical students learn standardized terms contained in the International Classification of Diseases (ICD) and the Diagnostic and Statistical Manual of Mental Disorders (DSM). While the inclusion of nursing standardized nomenclatures in nursing undergraduate programs is increasing, the rationale for the importance of nursing nomenclatures and their classification is not clearly provided. Many nursing graduate programs also do not include this content, including advanced practice nursing programs and doctoral programs. If the issues that hamper nursing data retrieval and warehousing are to be addressed, all nursing programs should strengthen curriculum content regarding the role of standardized nursing terminologies for building the knowledge base of the discipline and the importance of their inclusion in nursing CIS. Nursing continuing education programs should also offer this content for the many nurses who are currently practicing. As more nurses understand the importance of

PRESENTATION OF THE LINKAGES

The changes made in the construction of the linkages have allowed for changes in formatting of the linkages. The NIC interventions that are listed for the related factors with actual diagnoses are presented in alphabetical order before the table presenting the outcomes and interventions associated with the defining characteristics. Although the interventions are not linked to specific related factors, it is readily apparent which related factors have been considered when selecting interventions. For example, nursing interventions to treat the related factors of *Ineffective Peripheral Tissue Perfusion,* as described previously, include teaching interventions, exercise promotion, and health education. Related factors, such as aging and surgical procedures, cannot be resolved by nursing interventions, but need to be considered when planning care. In these instances, the important considerations are the effects of aging or surgery on the patient/client and the diagnoses, outcomes, and interventions that would address these effects.

The table linking the diagnoses, outcomes, and interventions now contains three columns: "Outcome," "Major Interventions," and "Suggested Interventions." The outcomes continue to be listed alphabetically with the outcome definition provided. The interventions are also listed alphabetically, thereby allowing the user to determine those most appropriate for the patient situation. Many of the interventions previously in the "Optional Interventions" column addressed related factors and therefore have been moved to "NICs Associated with Diagnosis Related Factors" or have been deleted. In other instances, the interventions in the suggested column address both the related factors and the defining characteristics and are included in both sections.

The changes not only continue to require the nurse to make clinical judgments about the outcomes and interventions for the individual patient but also may assist in identifying additional diagnoses for consideration. The changes have also helped the developers of NOC and NIC identify new outcomes and interventions that are needed as well as those that need further refinement. These changes, hopefully, will increase the usefulness of the linkages for clinicians, students, nurse informaticists and health information technology specialist.

The two case studies that follow illustrate the use of NOC and NANDA-I linkages with two NANDA-I diagnoses. One is a case study using two actual diagnoses, and the other case study is for the health promotion diagnosis *Readiness for Enhanced Childbearing Process.* Other case studies using NNN can be found in the second edition of *NANDA, NOC, and NIC Linkages: Nursing Diagnoses, Outcomes, & Interventions* (Johnson et al., 2006) and in the critical thinking book written by Lunney (2009).

CASE STUDY 1

NANDA-I Actual Diagnosis

Karl L. is an 80-year-old man, widowed for 10 years, who resides in his own home. Karl had a cholecystectomy when he was 65 and a transurethral resection of the prostate for benign prostatic hypertrophy when he was 70. He has been treated for congestive heart failure for the past 5 years, and during the past 3 months he has been taking 80 mg of Lasix each morning. Karl has reduced his activity level because of his cardiac decompensation and has experienced loss of strength and compromised mobility for self-care activities. He has particular difficulty with small motor tasks, particularly changing his clothing. He often does not remove his clothing at night and resists changing his clothing more than once or twice a week. Frequently, the home health nurse or aide finds his underwear and trousers wet with urine. His urinary output is usually over 1000 mL. He is a heavy coffee drinker and does not like decaffeinated coffee. Urinalysis revealed that the urine was clear of bacteria and fungi. Karl reports that he knows when he has to urinate, but that he cannot reach the toilet in time. He states that he has reduced his fluid intake, except for coffee, in an effort to decrease the need to urinate. Following a comprehensive assessment, the nurse documents the signs and symptoms (defining characteristics) for two priority nursing diagnoses: *Urge Urinary Incontinence* and *Toileting Self-Care Deficit.*

CASE STUDY 2—cont'd

Prenatal Health Behavior
Indicators
Uses proper body mechanics
Keeps appointments for prenatal care
Maintains healthy weight gain pattern
Attends childbirth education classes
Participates in regular exercise
Maintains adequate nutrient intake for pregnancy
Uses medication as prescribed
Consults health professional about nonprescription medication use
Avoids environmental hazards

Body Mechanics Promotion
Environmental Management: Safety
Exercise Promotion
Medication Management
Nutritional Counseling
Prenatal Care
Risk Identification
Vehicle Safety Promotion
Weight Management

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NOC-NIC LINKAGES FOR ACTIVITY PLANNING, INEFFECTIVE

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS

Artificial Airway Management	Chest Physiotherapy	Infection Control
Asthma Management	Cough Enhancement	Smoking Cessation Assistance

NOC-NIC LINKAGES FOR AIRWAY CLEARANCE, INEFFECTIVE

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS		
Cognitive Restructuring	Developmental Enhancement: Adolescent	Socialization Enhancement
Culture Brokerage		Spiritual Support
Delusion Management		

NOC-NIC LINKAGES FOR BODY IMAGE, DISTURBED

NOC-NIC LINKAGES FOR BREASTFEEDING, INEFFECTIVE

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS	
Vital Signs Monitoring	Hemodynamic Regulation

NOC-NIC LINKAGES FOR CARDIAC OUTPUT, DECREASED

NOC-NIC LINKAGES FOR CAREGIVER ROLE STRAIN

NOC-NIC LINKAGES FOR CHILDBEARING PROCESS, READINESS FOR ENHANCED

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS			
Airway Insertion and Stabilization	Culture Brokerage	Health Literacy Enhancement	Socialization Enhancement
Cerebral Edema Management	Delusion Management	Mood Management	Support System Enhancement
Cerebral Perfusion Promotion	Environmental Management	Self-Esteem Enhancement	Teaching: Individual

NOC-NIC LINKAGES FOR COMMUNICATION, IMPAIRED VERBAL

NOC-NIC LINKAGES FOR COMMUNITY COPING, READINESS FOR ENHANCED

NOC-NIC LINKAGES FOR CONSTIPATION

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS

Culture Brokerage	Family Support	Patient Rights Protection	Reality Orientation
Dementia Management			

NOC-NIC LINKAGES FOR CONSTIPATION, PERCEIVED

NOC-NIC LINKAGES FOR COPING, DEFENSIVE

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS

Anxiety Reduction	Decision-Making Support	Security Enhancement	Self-Esteem Enhancement
Crisis Intervention	Financial Resource Assistance	Self-Efficacy Enhancement	Support System Enhancement

NOC-NIC LINKAGES FOR COPING, INEFFECTIVE

NOC-NIC LINKAGES FOR COPING, READINESS FOR ENHANCED

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS		
Complex Relationship Building	Environmental Management: Comfort	Truth Telling

NOC-NIC LINKAGES FOR DEATH ANXIETY

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS		
Anxiety Reduction	Coping Enhancement	Support System Enhancement

NOC-NIC LINKAGES FOR DENIAL, INEFFECTIVE

NOC-NIC LINKAGES FOR ENERGY FIELD, DISTURBED

Critical Reasoning Note: There are a number of interventions to address the related factors. Therapeutic touch is the major intervention to address a disturbance in the energy field.

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS

Dementia Management
Mood Management

NOC-NIC LINKAGES FOR ENVIRONMENTAL INTERPRETATION SYNDROME, IMPAIRED

NOC-NIC LINKAGES FOR FAMILY COPING, COMPROMISED

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS

Anger Control Assistance Anxiety Reduction	Family Integrity Promotion	Guilt Work Facilitation	Mood Management

NOC-NIC LINKAGES FOR FAMILY COPING, DISABLED

Continued

NOC-NIC LINKAGES FOR FAMILY PROCESSES, DYSFUNCTIONAL

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NOC-NIC LINKAGES FOR FATIGUE

NICS ASSOCIATED WITH DIAGNOSIS RELATED FACTORS

Communication Enhancement: Hearing Deficit	Communication Enhancement: Visual Deficit	Environmental Management: Safety	Support System Enhancement
Communication Enhancement: Speech Deficit	Environmental Management: Comfort	Environmental Management: Violence Prevention	

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