

Third Edition

# NOC and NIC Linkages to NANDA-I and Clinical Conditions

*Supporting Critical Reasoning and Quality Care*



Marion Johnson • Sue Moorhead • Gloria Bulechek  
Howard Butcher • Meridean Maas • Elizabeth Swanson

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NOC AND NIC LINKAGES TO NANDA-I AND CLINICAL CONDITIONS:  
SUPPORTING CRITICAL REASONING AND QUALITY CARE

ISBN: 978-0-323-07703-3

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#### Notice

Knowledge and best practice in this field are constantly changing. As new research and experience broaden our knowledge, changes in practice, treatment and drug therapy may become necessary or appropriate. Readers are advised to check the most current information provided (i) on procedures featured or (ii) by the manufacturer of each product to be administered, to verify the recommended dose or formula, the method and duration of administration, and contraindications. It is the responsibility of the practitioner, relying on their own experience and knowledge of the patient, to make diagnoses, to determine dosages and the best treatment for each individual patient, and to take all appropriate safety precautions. To the fullest extent of the law, neither the Publisher nor the [Editors/Authors] [delete as appropriate] assumes any liability for any injury and/or damage to persons or property arising out of or related to any use of the material contained in this book.

The Publisher

Previous editions copyrighted 2001, 2006

Library of Congress Control Number 978-0-323-07703-3

*Senior Editor:* Sandra Clark  
*Senior Developmental Editor:* Charlene Ketchum  
*Publishing Services Manager:* Jeffrey Patterson  
*Project Manager:* Mary G. Stueck  
*Designer:* Kimberly Denando

Printed in the United States of America

Last digit is the print number: 9 8 7 6 5 4 3 2 1

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# PREFACE

This edition of the book consists of four parts. Part I includes three chapters that describe the languages and their uses. Part II provides the linkages among NANDA-I diagnoses, NOC outcomes, and NIC interventions. Parts I and II were included in the previous editions of this text. Part III is new; it describes links between NOC and NIC and selected clinical conditions. Part IV, also included previously, includes appendixes listing NOC and NIC labels and definitions.

The title for the third edition of the book changed to reflect the addition of links to clinical conditions. The major portion of the book continues to contain the NOC and NIC linkages to NANDA-I diagnoses, but now with the addition of linkages for ten common clinical conditions that nurses see frequently in their practice. The conditions include Asthma, Chronic Obstructive Pulmonary Disease, Colon and Rectal Cancer, Diabetes Mellitus, Depression, Heart Failure, Hypertension, Pneumonia, Stroke, and Total Joint Replacement: Knee/Hip. These conditions are prevalent in the United States, are often chronic, and can carry considerable cost for the patient and for society.

The standardized nursing languages used in the book are 2009–2011 diagnoses of NANDA International, the Nursing Outcomes Classification (NOC) terms published in the 4th edition, and the Nursing Intervention Classification (NIC) terms published in the 5th edition. The illustration of how these three languages can be linked together shows the relationship among nursing diagnoses, outcomes, and interventions and can facilitate clinical reasoning. The book can assist nurses to develop plans of care for individual patients or for patient populations, and can be of use in electronic information systems. Providing linkages among a nursing diagnosis, an outcome, and the interventions selected to manage the diagnosis and meet the outcome allows for the evaluation of nursing care for patient populations and the determination of nursing effectiveness.

Part I of the book contains three chapters. The first two are similar to chapters in previous editions and the third chapter is completely new. Chapter 1 provides a brief overview of the three languages, a description of how the linkage work has progressed over time, and the changes found in the presentation

of the linkages. Chapter 2 focuses on how the linkages can be used in designing nursing care, computer-based information systems, and in clinical reasoning and decision-making. It provides an overview of using the Outcome-Present State (OPT) Model as an example of clinical reasoning that can be particularly helpful when teaching students. Chapter 3 takes a different focus, discussing how the languages can be used in the design and application of electronic nursing information systems. This chapter will be useful to nurses who need to identify the information they want from an electronic system and how they can make use of it, as well as information technology nurses who assist in system design and implementation in their organization. The authors are interested in feedback on the usefulness of this chapter and whether it or a similar chapter should be included in future editions.

Part II consists of the linkages between NANDA-I diagnoses, NOC outcomes, and NIC interventions. The links are entered through the NANDA-I diagnosis. The diagnoses are listed alphabetically with two exceptions: (1) the “risk for” diagnoses are in one section following the diagnoses focused on actual problems and health promotion; and (2) the major concept is used for determining how the diagnosis is listed. For example, Impaired Swallowing will be found under Swallowing, Impaired, and Imbalanced Nutrition: Less than Body Requirements is under Nutrition, Imbalanced: Less than Body Requirements. Suggested NOC outcomes are linked to each of the diagnoses, and suggested NIC interventions are linked to each of the outcomes. Definitions for the diagnosis and outcomes are provided in the table, and Part IV: Appendixes provides definitions for both the outcomes and the interventions.

Changes have been made in the selection of the outcomes and the interventions. The outcomes selected reflect the measurement of: (1) the reversal of the problem identified in an actual diagnosis, (2) improvement of the patient state identified by the defining characteristics of the nursing diagnosis and (3) the actual problem to be prevented as well as outcomes that address the related factors in the “risk for” diagnoses. Interventions to consider choosing for the related factors precede each NANDA-I, NOC, NIC linkages. This assists in identifying those outcomes

and interventions that directly address the current patient state as defined by the diagnosis and defining characteristics. Clinical reasoning notes were added to some of the diagnoses to clarify the reason for a selection or to identify why some outcomes/interventions were chosen or not chosen. These are major changes in the reasoning process used to identify outcomes and interventions; previously outcomes and interventions that addressed the diagnosis, defining characteristics, and related factors were included in the all linkages.

The “risk for” diagnoses linkages were revised to prevent repeating the same or similar outcomes and interventions used with an actual diagnosis when there is a corresponding “risk for” diagnosis; for example, Situational Low Self-Esteem and Risk for Situational Low Self-Esteem.

In previous editions, the outcomes for measuring prevention of the “risk for” state, in this case low self-esteem, were generally a modified repetition of the outcomes for measuring resolution of the actual state, chronic low self-esteem. In this edition, the outcome Self-Esteem that measures whether low self-esteem occurs when using the diagnosis Risk for Situational Low Self-Esteem is presented as the outcome to measure the occurrence of the “risk” problem. Interventions to achieve this outcome can be found with the actual diagnosis, Chronic Low Self-Esteem. Following this outcome are a list of NOC outcomes and a list of interventions associated with the risk factors for low self-esteem. The interventions are not linked to the outcomes because the list of outcomes can include only a few or many labels; if the list is over 20 labels, it becomes prohibitive to provide interventions for each of the

outcomes, especially when an intervention can be applicable to more than one outcome. Again, these are major changes in the reasoning process behind the presentation of the “risk for” diagnoses, and feedback from users of this text on the usefulness, or not, of these changes would be appreciated.

Part III is a new section in this edition. It includes the ten clinical conditions identified previously. Each condition has a brief description that includes the prevalence, mortality, and cost as appropriate for each condition, as well as a concise overview of the course of the condition and/or the symptoms of the condition. This description is followed by a generic plan of care that illustrates the use of NOC outcomes and NIC interventions for the clinical condition. The care plans generally do not encompass the condition from diagnosis throughout the course of the illness because many of the conditions are chronic and will last for the remainder of the the patient’s life. This section is a brief illustration of the use of NOC outcomes and NIC interventions if the clinical condition is described using a term that does not appear in NANDA-I. Possible outcomes are presented with a brief list of interventions appropriate for the clinical condition. In most instances the reader can readily identify the nursing diagnosis that might represent the patient state implied in the outcome.

As with previous editions, we appreciate all feedback; positive and negative, regarding what to change and what not to change and how to strengthen the book for the various users. This is of particular interest because of the changes made in this edition.

*Marion Johnson*

# FOREWORD

## **UNIFYING NURSING LANGUAGES**

Consider the English language. There are as many variations as there are nationalities who claim it as their mother tongue. In the United Kingdom, for example, people put their shopping in the boot. In North America, people put boots on their feet and shopping purchases in the trunk. Even as I write this foreword, the differences in language are apparent. There is a squiggly red line underneath my UK English spelling of the word “center” and the only way to make it go away is to change my default language to US English.

Although amusing anecdotes illustrating how we are divided by our common language make wonderful dinner conversations, safe clinical practice and effective research and education rely on consistency within language, particularly in relation to nursing diagnoses, interventions, and outcomes.

The fact that you are holding a book that addresses this issue means that you are a person who recognizes that you can be part of the solution.

NANDA International and the Center for Nursing Classification and Clinical Effectiveness at the University of Iowa’s College of Nursing (the Center) continue to develop and promulgate the world’s foremost evidence-based nursing classifications of nursing diagnoses, interventions, and outcomes. This book demonstrates the positive impact that a closer working relationship between NANDA International and the Center can have on patient safety.

As President of NANDA International, I am personally committed to further developing this relationship for the benefit of safer patient care and commend this work to you.

*Professor Dickon Weir-Hughes  
President, NANDA International*

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# Languages and Development of the Linkages

*Sue Moorhead and Joanne McCloskey Dochterman*

## 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

**DEFINITION:** Development of a negative perception of self-worth in response to a current situation (specify)

**DEFINING CHARACTERISTICS:** Evaluation of self as unable to deal with events; evaluation of self as unable to deal with situations; expressions of helplessness; expressions of uselessness; indecisive behavior; nonassertive behavior; self-negating verbalizations; verbally reports current situational challenge to self-worth

**RELATED FACTORS:** Behavior inconsistent with values; developmental changes; disturbed body image; failures; functional impairment; lack of recognition; loss; rejections; social role changes

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](http://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](http://www.nursing.uiowa.edu/cnc).

## NOC

In 1991 a research team, led by Marion and Meridian 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](http://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**

**DOMAIN:** Psychosocial Health (III)

**CARE RECIPIENT:**

**CLASS:** Psychological Well-Being (M)

**DATA SOURCE:**

**SCALE(S):** Never positive to Consistently positive (k)

**DEFINITION:** Personal judgment of self-worth

**OUTCOME TARGET RATING:**

Maintain at \_\_\_\_\_

Increase to \_\_\_\_\_

	Never Positive	Rarely Positive	Sometimes Positive	Often Positive	Consistently Positive	
<b>Self-Esteem Overall Rating</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>Indicators:</b>						
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**

Bonham, P., & Cheney, A. (1982). Concept of self: A framework for nursing assessment. In P. L. Chinn (Ed.), *Advances in nursing theory development* (pp. 173–189). Rockville, MD: Aspen.

Coopersmith, S. (1967). *The antecedents of self-esteem*. San Francisco: W. H. Freeman.

Crandall, R. (1973). The measurement of self-esteem and related constructs. In J. P. Robinson & P. R. Shaver (Eds.), *Measures of social psychological attitudes*. Ann Arbor, MI: Institute for Social Research, University of Michigan.

Fitts, W. (1965). *Manual for the Tennessee Self-Concept Scale*. Nashville: Counselor Recordings & Tests.

Groh, C. J., & Whall, A. L. (2001). Self-esteem disturbance. In M. Maas, K. Buckwalter, M. Hardy, T. Tripp-Reimer, M. Titler, & J. Specht (Eds.), *Nursing care of older adults: Diagnoses, outcomes & interventions* (pp. 593–600). St. Louis: Mosby.

Larson, J. (1989). Validation of the defining characteristics of disturbance in self-esteem in patients with anorexia nervosa. In R. Carroll-Johnson (Ed.), *Classification of nursing diagnoses: Proceedings of the eighth conference (North American Nursing Diagnosis Association)* (pp. 307–312). Philadelphia: J.B. Lippincott.

Nugent, W. R., & Thomas, J. W. (1993). Validation of a clinical measure of self-esteem. *Research on Social Work Practice*, 3(2), 191–207.

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 interventions, 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

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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.

## REFERENCES

- Abdellah, F. G. (1969). The nature of nursing science. *Nursing Research, 18*, 390–393.
- Anderson, C. A., Keenan, G., & Jones, J. (2009). Using bibliometrics to support your selection of a nursing terminology set. *CIN, Computers, Informatics, Nursing, 27*(2), 82–98.
- Bakken, S., & Currie, L. M. (2011). Standardized terminologies and integrated information systems: Building blocks for transforming data into nursing knowledge. In P. S. Cowen & S. Moorhead (Eds.), *Current issues in nursing* (8th ed., pp. 287–296). St. Louis: Mosby Elsevier.
- Bartlett, R., Bland, A., Rossen, E., Kautz, D., Benfield, S., & Carnevale, T. (2008). Evaluation of the Outcome-Present State Test Model as a way to teach clinical reasoning. *Journal of Nursing Education, 47*(8), 337–344.
- Bland, A., Rossen, E., Bartlett, R., Kautz, D., Carnevale, T., & Benfield, S. (2009). Implementation and testing of the OPT model as a teaching strategy in an undergraduate psychiatric nursing course. *Nursing Education Perspectives, 30*(1), 14–21.
- Bulechek, G. M., Butcher, H., & Dochterman, J. M. (Eds.). (2008). *Nursing interventions classification (NIC)* (5th ed.). St. Louis: Mosby/Elsevier.
- Clancy, T. R., Delaney, C. W., Morrison, B., & Gunn, J. K. (2006). The benefits of standardized nursing languages in complex adaptive systems such as hospitals. *Journal of Nursing Administration, 36*(9), 426–434.
- Dochterman, J. M., & Bulechek, G. M. (Eds.). (2004). *Nursing interventions classification (NIC)* (4th ed.). St. Louis: Mosby.
- Dochterman, J. M., & Jones, D. A. (Eds.). (2003). *Unifying nursing languages: The harmonization of NANDA, NIC, and NOC*. Washington, DC: American Nurses Association.
- Farren, A. T. (2010). An educational strategy for teaching standardized nursing languages. *International Journal of Nursing Terminologies and Classifications, 21*(1), 3–10.
- Fesler-Birch, D. (2005). Critical thinking and patient outcomes: A review. *Nursing Outlook, 53*(2), 59–65.
- Fischetti, N. (2008). Using standardized nursing languages: A case study exemplar in management of diabetes mellitus. *International Journal of Nursing Terminologies & Classifications, 19*(4), 163–166.
- Gebbie, K., & Lavin, M. A. (1975). *Proceedings of the first national conference on the classification of nursing diagnoses*. St. Louis: Mosby.
- Hunt, E. C., Sproat, S. B., & Kitzmiller, R. R. (2004). *The nursing informatics implementation guide*. New York: Springer.
- Johnson, M., Bulechek, G., Dochterman, J. M., Maas, M., & Moorhead, S. (2001). *Nursing diagnoses, outcomes, & interventions: NANDA, NOC, and NIC linkages*. St. Louis: Mosby.
- Johnson, M., Bulechek, G., Butcher, H., Dochterman, J. M., Maas, M., Moorhead, S., & Swanson, E. (2006). *NANDA, NOC, and NIC linkages: Nursing diagnoses, outcomes, and interventions* (2nd ed.). St. Louis: Mosby.
- Johnson, M., & Maas, M. (Eds.). (1997). *Nursing outcomes classification (NOC)* (1st ed.). St. Louis: Mosby.
- Johnson, M., Maas, M., & Moorhead, S. (Eds.). (2000). *Nursing outcomes classification (NOC)* (2nd ed.). St. Louis: Mosby.
- Jones, D. L. (1997). Building the information infrastructure required for managed care. *Image: Journal of Nursing Scholarship, 29*(4), 377–382.
- Kautz, D. D., Kuiper, R., Pesut, D. J., & Williams, R. L. (2006). Using NANDA, NIC, and NOC (NNN) language for clinical reasoning with the Outcome-Present State Test (OPT) Model. *International Journal of Nursing Terminologies and Classifications, 17*(3), 129–138.
- Keenan, G., & Aquilino, M. L. (1998). Standardized nomenclatures: Keys to continuity of care, nursing accountability, and nursing effectiveness. *Outcomes Management for Nursing Practice, 2*(2), 81–85.
- Lavin, M. A., Avant, K., Craft-Rosenberg, M., Herdman, T. H., & Gebbie, K. (2004). Context for the study of the economic influence of nursing diagnoses on patient outcomes. *International Journal of Nursing Terminologies and Classifications, 15*(2), 39–47.
- Lavin, M. A., Meyers, G. A., & Ellis, P. (2007). A dialogue on the future of nursing practice. *International Journal of Nursing Terminologies and Classifications, 18*(3), 74–83.
- Levin, R. F., Lunney, M., & Krainovich-Miller, B. (2004). Improving diagnostic accuracy using an evidence-based nursing model. *International Journal of Nursing Terminologies and Classifications, 15*(4), 114–122.
- Lunney, M. (2003). Critical thinking and accuracy of nursing diagnoses. *International Journal of Nursing Terminologies and Classifications, 14*(3), 96–107.
- Lunney, M. (2006). Helping nurses use NANDA, NOC, and NIC: Novice to expert. *Nurse Educator, 31*(1), 40–46.
- Lunney, M. (2009). *Critical thinking to achieve positive health outcomes: Nursing case studies and analyses*. Ames, IA: Wiley-Blackwell.
- Lunney, M., Delaney, C., Duffy, M., Moorhead, S., & Welton, J. (2005). Advocating standardized nursing languages in electronic health records. *Journal of Nursing Administration, 35*(1), 1–3.
- Maas, M. L. (1985). Nursing diagnosis: A leadership strategy for nursing administrators. *Journal of Nursing Administration, 1*(6), 39–42.
- McCloskey, J. C., & Bulechek, G. M. (Eds.). (1992). *Nursing interventions classification (NIC)* (1st ed.). St. Louis: Mosby Year Book.
- McCloskey, J. C., & Bulechek, G. M. (1994). Standardizing the language for nursing treatments: An overview of the issues. *Nursing Outlook, 42*(2), 56–63.
- McCloskey, J. C., & Bulechek, G. M. (Eds.). (1996). *Nursing interventions classification (NIC)* (2nd ed.). St. Louis: Mosby Year Book.
- McCloskey, J. C., & Bulechek, G. M. (Eds.). (2000). *Nursing interventions classification (NIC)* (3rd ed.). St. Louis: Mosby.
- McCormick, K. A. (1991). Future data needs for quality of care monitoring, DRG considerations, reimbursement, and outcome measurement. *Image: Journal of Nursing Scholarship, 23*(1), 29–32.
- Moorhead, S., Johnson, M., & Maas, M. (Eds.). (2004). *Nursing outcomes classification (NOC)* (3rd ed.). St. Louis: Mosby.

- Moorhead, S., Johnson, M., Maas, M., & Swanson, E. (Eds.). (2008). *Nursing outcomes classification (NOC)* (4th ed.). St. Louis: Mosby Elsevier.
- Muller-Staub, M., Needham, I., Odenbreit, M., Lavin, M. A., & Van Achterberg, T. (2007). Improved quality of nursing documentation: Results of nursing diagnoses, interventions, and outcomes implementation study. *International Journal of Nursing Terminologies & Classifications*, 18(1), 5–17.
- NANDA International. (2009). *Nursing diagnoses: Definitions and classification 2009-2011*. West Sussex, United Kingdom: Wiley-Blackwell.
- North American Nursing Diagnosis Association. (1999). *Nursing diagnoses: Definitions & classification 1999-2000*. Philadelphia: Author.
- Pesut, D. J. (2006). 21st century nursing knowledge work: Reasoning into the future. In C. Weaver, C. W. Delaney, P. Weber, & R. Carr (Eds.), *Nursing and informatics for the 21st century: An international look at practice, trends and the future* (pp. 13–23). Chicago: Health Care Information and Management Systems Society.
- Pesut, D., & Herman, J. (1998). OPT: Transformation of nursing process for contemporary practice. *Nursing Outlook*, 46(1), 29–36.
- Pesut, D. J., & Herman, J. (1999). *Clinical reasoning: The art & science of critical & creative thinking*. Albany, NY: Delmar.
- Simmons, B., Lanuza, D., Fonteyn, M., Hicks, F., & Holm, K. (2003). Clinical reasoning in experienced nurses. *Western Journal of Nursing Research*, 25(6), 701–719.
- Zielstorff, R. D. (1994). National data bases: Nursing's challenge, classification of nursing diagnoses. In R. M. Carroll-Johnson & M. Paquette (Eds.), *Classification of nursing diagnoses: Proceedings of the Tenth Conference* (pp. 34–42). Philadelphia: J.B. Lippincott.

# Use of Linkages for Clinical Reasoning and Quality Improvement

*Howard Butcher and Marion Johnson*

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

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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 indicators 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