Generating Middle Range Theory
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Generating
Middle Range Theory
From Evidence to Practice

Sister Callista Roy, PhD, RN, FAAN
With the Roy Adaptation Association

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Dedicated to the loving memory of Susan Pollock, PhD, RN, FAAN, an exceptional scholar who brought us together, initiated this work, and began the Roy Adaptation Association—our mentor, our colleague, our friend
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This book stems from significant trends established in nursing, yet it may be the first of its kind. Knowledge for nursing practice is an abiding need to meet the social mandate of nursing. All professions respond to needs in society from their own specific knowledge base. The profession is accountable for developing knowledge and for implementing it in practice. Theoretical and research knowledge in nursing are growing at a rapid pace. Funding for nursing research, the focus on evidence-based practice, and middle range theory (MRT) are significant movements that aim to close the gap between developing nursing knowledge and the changing demands in nursing practice. A gap between knowledge and practice limits the impact of nursing care. Given the significant advantage of having a reservoir of 15 years of research based on one theoretical model and having already published a review of the first 25 years of research based on this model, the Executive Board members of the Roy Adaptation Association (RAA) took on the challenge of developing and illustrating an innovative way to close the gap between knowledge and practice. The unique approach being offered is generating MRTs from 172 studies based on the Roy adaptation model and using the research evidence from the studies within the MRTs to provide evidence for practice. With a focus on creative ways to apply this knowledge to practice illustrated throughout the book, this cumulative knowledge can change practice and affect policies for practice.

The authors assert that this approach to knowledge can be helpful to beginning students, students in advanced practice, those studying for the DNP and for the PhD, as well as nurses in practice, particularly those working to attain the accreditation of Magnet status for their institutions. Nurse scholars using these approaches in isolation will welcome this new combination of knowledge development strategies. To bring theory
and research to the practice level is a significant skill for all nurses. The approach provided here is easy to understand. The usefulness of research of all designs, both qualitative and quantitative, can be readily understood. Further, the relevance of research findings to practice can be explored for any setting. Similarly, creating MRT is demystified as concepts are identified from multiple research projects. The simple concepts are linked in statements and in pictorial schemas so that relationships are apparent. Each MRT has a compelling exemplar for practice. The author then specifically establishes the evidence-based practice for the MRT and relates this to Roy’s levels of readiness for practice. An added bonus is two approaches to studying and showing how theory and research are used globally, one for Latin American countries and the other for sampling the globe.

The book is organized into five parts, each with an introduction. Part I sets the stage for this project and in Chapter 1, we describe knowledge that has been created and why we propose an alternative approach. Chapter 2 outlines the processes that make up the approach. In Part II the research projects are described in tables and text. The organization is to help the reader see the contribution of many research designs. Chapter 3 is on qualitative research and introduces this topic, then presents the studies by types of qualitative designs. Chapter 4 covers the descriptive quantitative studies and organizes them by clusters of concepts of the Roy adaptation model. Chapter 5 contains studies that aim to explain, predict, and prescribe, all organized by clusters of model concepts. The final chapter on quantitative studies, Chapter 6, describes the intervention studies clustered by related concepts.

In Part III the five MRTs are generated: coping (Chapter 7); adapting to life events (Chapter 8); adapting to loss (Chapter 9); adapting to chronic health conditions (Chapter 10); and adapting families (Chapter 11). Each chapter follows the 6-step process laid out in Chapter 2 and focuses on how the MRT can affect practice. Part IV (Chapter 12) details the important step of putting together the MRTs derived from research with the evidence that supports them and showing their readiness for practice now and in the future. Part V (Chapter 13) samples the theory and research around the globe. The appendix of instruments and measurements used in the studies will be particularly useful for researchers in identifying how other scholars have measured concepts of the model. We are pleased to offer to educators in health care and academic settings two kinds of teaching tools online. The sections of the book are introduced in videos featuring the theorist, and a study guide by an RAA educator provides discussion
questions at varying levels of complexity. These can be found at the Springer Publishing Company website at textbook@springerpub.com.

We hope that this effort will lead to similar new approaches to accumulating knowledge for practice, closing the gap between knowledge and practice, and linking the strengths of theory and research to lead change in practice that provides access to quality care for all.

Sister Callista Roy, PhD, RN, FAAN, and The Executive Board of the Roy Adaptation Association
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_Sister Callista Roy, PhD, RN, FAAN, with the Roy Adaptation Association Executive Board_
As a practice discipline, nursing will continue to develop knowledge to meet the changing health needs of society. A substantial issue in accomplishing this goal is to close the gap between knowledge developed by both theory and research and implementation in practice. This book takes a unique approach to cumulative nursing knowledge development for practice. The purpose of Part I is to set the stage for this project. One chapter provides a background of how knowledge for practice has been created offering a proposal for adding an alternative approach. Another chapter outlines a series of processes that make up that approach.

To orient the reader to a unique approach to developing knowledge for practice in Chapter 1, the author provides an overview of the factors that have affected nursing as a discipline in developing knowledge for practice. The author narrates nursing’s rich history and heritage of multiple contributions to the significant growth in nursing knowledge during the 20th century and the beginning decades of the 21st century. The point is made that the significance of knowledge development to date is not debated. However, nurses still face a challenge in taking the lead in advancing a health agenda and thereby closing the gap between our knowledge and impact on practice. We need to make developments in nursing science visible and effective. The aim is to critically review how the discipline of nursing provides evidence and ways used to close the gap between theory and research and knowledge used in practice. The author acknowledges current great achievements of knowledge impacting practice. The significant programs of the National Institute of Nursing Research program on translational research and the evidence-based practice (EBP) movement are discussed. Each is also critiqued for the limitations that allow for another approach.
The content and process of middle range theory are offered as a way to bridge the gap between theory and research and evidence for high-quality practice. A six-step process for developing middle range theory is described. The author outlines a new definition for EBP that allows for three levels of readiness for application in practice: support for implementation, need for review by clinical nurse specialists to confirm readiness, and need for replication of studies. The reader is introduced to the processes that will be used to link middle range theories derived from the research studies to a new perspective on EBP.

In Chapter 2 the author describes the details of how 200 studies based on one theoretical model provide the research findings in multiple clinical areas to generate middle range theory and provide evidence for practice. A number of issues that were dealt with in the processes for description and critical analysis of the research are described. Three primary concerns are identified and discussed: (1) how to identify studies with potential for use in this development of knowledge that is evidence based, (2) how to describe and critically analyze each study to identify the strengths of the evidence, and finally (3) how the studies are organized and presented so they can be used in the generation of middle range theory and evidence for practice. The rest of the project as described in the following chapters stands on these foundational chapters of Part I.
Nurses in practice face great challenges and opportunities in the early decades of the 21st century. In the United States health care finance dominates the scene, leaving every health care provider facing obstacles to providing safe and high-quality care. Nurses comprise the largest number of health care providers, numbering approximately 3.1 million (AACN, 2012). Nursing has gone through a great growth period in knowledge development and in expanding roles in the past few decades. Increasing education and resources for research have contributed to building knowledge and nurses at all levels have expanded their roles to take more responsibility for the quality of patient care. At the same time, nurses confront the demand to keep ahead of changes in society. As a profession nursing has a social mandate to contribute to the good of society through knowledge-based practice. As a practice discipline, nursing will maintain the priority of quality of care for all people, yet find new ways to meet changing health needs (Meleis, 2007). To meet these needs we recognize that our world is in transition—with changes on multiple levels. Demographics show increased diversity of ethnicities and cultures and an aging population in most developed countries. We are affected by global migration and the globalization of the world’s economy, with increasing discrepancies between the rich and the poor both within and among countries. Nurses are dealing also with changes in science and technology such as genetics and information technology.

The past 30 years of growth in nursing knowledge has been shaped by the discipline’s values and goals and was designed to improve quality of care and health of individuals, families, communities, and society. Still
many authors noted that we have a gap between knowledge development and knowledge used in practice. McEwen recognized that after repeated calls to integrate theory, research, and practice, “the interaction remains fragmented or unrecognized” (2007, p. 416). More recently, Im and Chang (2012) explored trends in nursing theories and identified integration to practice as one of six major themes, but interpreted the data as only the beginning of long overdue efforts to link theory to practice as a basis for nursing care.

In this chapter the author examines the strategies used to develop knowledge for practice. The factors that influence nursing knowledge development are outlined to provide a background to critique approaches taken to close the gaps among theory and research and knowledge used in nursing practice. This critique includes funded translational research and the evidence-based practice (EBP) movement. The content and process of generating middle range theory (MRT) from a set of related studies is offered as a significant way to bridge this knowledge–practice gap. The relevance of MRTs supported by findings from 172 studies using the same conceptual framework is explored as a way of accumulating knowledge to be used as evidence for practice. A distinctive definition of EBP (Roy, 2009) that allows for three levels of readiness for application in practice is described: support for implementation, need for review by advanced practice nurse specialists to confirm readiness, and need for replication of studies.

FACTORS INFLUENCING KNOWLEDGE DEVELOPMENT

The development of knowledge for nursing practice has a rich history that includes the evolution of specific strategies. In a summary of the state-of-the-art of nursing knowledge (Roy & Jones, 2007), Roy outlined the key influences on nursing knowledge development in the United States in the last century. These influences came from the growth in nursing education, early scholars, as well as publications and major conferences. These efforts combined to mature the discipline in the 20th century, with clarification of the theoretical focus of nursing as holistic persons with processes and patterns for environmental integration to attain health (Donaldson & Crowley, 1978). From the productive work of the end of the 20th century arose the foci for knowledge as well as development of nursing practice to be used in the 21st century.

Nursing Education

The educational pathway to growth in nursing knowledge was significant, though perhaps not always consistent and direct. The University of Minnesota and Teachers College at Columbia University began granting
baccalaureate degrees in the early 1900s, and by 1949 there were 55 programs for degree students in schools owned and operated by a university or college. Rapid growth of baccalaureate programs followed the Brown report (1948), which recommended that schools of nursing be established in universities and colleges, comparable in number to existing medical schools, that they have adequate facilities and faculty, and be well-distributed to serve the needs of the country. Nursing had the opportunity to become an academic discipline and nurse scholars challenged the profession to define its own knowledge base. One nurse leader of influence wrote, “Certainly no profession can long exist without making explicit its theoretical bases for practice so that this knowledge can be communicated, tested, and expanded” (Johnson, 1959).

In the 1950s as noted there was a period of rapid growth of baccalaureate programs in the United States. Colleges and universities established generic programs with a nursing major built on liberal arts and sciences. Applicants met university requirements and graduated with a degree and the preparation to take examinations to become a nurse registered by the state. This growth continued and today there are more than 700 baccalaureate programs in the United States. This was also a period of growth for master’s education, with programs maturing from 1964 to 1975. From that time until the present, the age of specialization in master’s education, including graduate education for the role of the nurse practitioner, was born. Today there are 300 accredited master’s degree programs with an emphasis on advanced practice.

The growth in nursing education hastened the development of nursing knowledge as faculty organized nursing knowledge to be taught in university programs at the undergraduate and graduate levels. This led to identifying the knowledge needed; nurse scholars would add more focused nursing knowledge to educational programs that began with curricula heavily based on biological and behavioral sciences. This need for knowledge from a nursing perspective added momentum to the influences of the people, publications, and conferences of this era. Although academic nursing grew and stimulated growth in nursing knowledge for practice, it must be noted that until the 1960s, diploma programs were the major source of graduates prepared for registration as nurses. These programs held great prominence in the 1950s and 1960s, with approximately 818 diploma schools in the United States in 1963 (American Nurses Association [ANA], 1966). Further, an experiment with 2-year programs in community colleges began in the 1970s. As diploma programs began closing, the explosive growth of the associate degree nursing (ADN) programs was hastened by factors such as a nursing shortage, an increase in federal financial assistance for nursing education, and new concerns about equal access to education and health care (Smith, 2009).
The reality is that to this day all state boards of nursing require each nursing graduate to pass the National Council Licensure Examination (NCLEX), developed by the National Council of State Boards of Nursing (NCSBN) as the standardized exam that determines whether or not a candidate is prepared for entry-level nursing practice. This includes nurses with education in diploma programs, associate degrees, and baccalaureate degrees. As early as 1965 the American Nurses Association Committee on Education issued a statement that was adopted by the Board of Directors and became the “position paper” recommending that the minimum preparation for beginning professional nursing practice should be at the baccalaureate level (ANA, 1965). The ANA committee on education noted in particular the changes in nursing practice at that time, including “major theoretical formulations, scientific discoveries, technological innovations, and the development of radical new treatments” (p. 107). Thus began 40 years of debate and efforts within the profession to establish the minimum level of education for entry into practice. In 2000, 29.6% of nurses in practice received their basic education in diploma programs and the percent educated with associate degrees increased to 40.3 (Nelson, 2002). In a 2009 paper on policy related to entry into practice, Smith concluded, “Considering the accelerated pace of today’s educational, technological, and social changes, it is imperative that the educational foundation on which our profession is based remains in step with these changes. Now more than ever, we must rededicate ourselves to making the initial entry proposal a reality” (Smith, 2009, n.p.).

Although some energy has been expended without positive results on the entry-into-practice issue, at the same time this very concern possibly added momentum to the development of doctoral education in nursing in the 1970s and 1980s. Well-prepared faculty for baccalaureate and master’s nursing education became a priority. Historically, Teachers College at Columbia University offered the EdD for nurses in 1933 and New York University followed in 1934. The first PhD degree for nurses was started by the University of Pittsburgh in 1954, with both University of California at San Francisco and Catholic University offering the Doctor of Nursing Science (DNSc) in the 1960s. By the 1970s most new doctoral programs in nursing offered the PhD degree. According to the American Association of Colleges of Nursing (AACN), 30 new PhD programs were added in the 1980s and 26 in the 1990s. Many DNSc programs have converted to the PhD. By 2009 there were 120 PhD programs in nursing that offered the research doctorate. The research doctorate is intended to prepare students to use intellectual inquiry to pursue knowledge and carry out independent research (AACN, 2001).

The PhD programs in nursing are effective approaches to knowledge development for practice because the students admitted to these programs
raise significant questions from practice and are socialized into nursing as a scholarly profession with knowledge based on theory and research. The curricula of the PhD programs provides students with a focus for knowledge development and methods for theory development and for research. Each year approximately 600 PhD dissertations in nursing are filed, making available new knowledge, most of which is focused on nursing practice. As PhD graduates, these nurses become committed scholars intent on continuing to develop knowledge and translate the new knowledge into practice.

By 2004 there were changes in advanced practice that led to the AACN position statement calling for educating advanced practice registered nurses (APRNs) and other nurses seeking top clinical positions in Doctor of Nursing Practice (DNP) programs (AACN, 2004). The AACN identified that many factors emerged to build momentum for this change in nursing education at the graduate level, including: “the rapid expansion of knowledge underlying practice; increased complexity of patient care; national concerns about the quality of care and patient safety; shortages of nursing personnel which demands a higher level of preparation for leaders who can design and assess care; shortages of doctorally prepared nursing faculty, and increasing educational expectations for the preparation of other health professionals” (AACN, 2012). Proponents of the movement noted that often advanced practice nurses such as nurse practitioners, clinical nurse specialists, and more specialized programs like nurse midwives and nurse anesthetists are prepared in master’s degree programs, which sometimes carry a credit load equivalent to the clinical doctoral degrees in the other health professions. The curriculum for DNP programs build on what is taught in master’s degree programs and added content in key areas such as EBP, quality improvement, and systems thinking. In 2012 the AACN reported that there were 217 DNP programs (www.aacn.nche.edu). It remains to be seen whether the DNP movement will actualize the much anticipated bridging of the gap between nursing knowledge and nursing practice.

Theoretical Scholars in Nursing

Leading textbooks on nursing theory and knowledge development outline the key scholars in nursing who influenced the pathway to knowledge development in the discipline. Each version that outlines the scholars varies by the purpose of the publication and the viewpoint of the author. Our purpose in this chapter is to acknowledge major theoretical scholars in nursing with an emphasis on the continued efforts to relate knowledge development to nursing practice.
Peplau (1952) introduced a new way of thinking about nursing practice as an interpersonal relationship with the patient that is focused on growth of the personality of the individual. Peplau contributed greatly to nursing organizations as both president and executive director of the ANA. Contributions that stand out relate to nursing practice, for example, Peplau was on the team that wrote the first ANA Nursing’s Social Policy Statement in 1980. She made significant contributions to psychiatric nursing as a specialty, establishing the first master’s degree focused on the nurse–patient psychodynamic relationship. Practice principles that she promoted in her writing and the hundreds of workshops she gave around the country included:

1. The nurse being able to understand one’s own behavior to help others identify felt difficulties, and to apply principles of human relations to the problems that arise at all levels of the experience.
2. The goal of nursing is the forward movement of personality of the person.
3. The process involves four overlapping phases from orientation to resolution.
4. Nurses take on six different roles, including resource person and teacher.

The influence of another major scholar, Henderson, was felt both nationally and internationally. Her definition of nursing, written in 1966, stated: “The unique function of the nurse is to assist the individual (sick or well), in the performance of those activities contributing to health or its recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will, or knowledge. And to do this in such a way as to help him gain independence as rapidly as possible” (Henderson, 1991, p. 21). The definition used in her textbook was adopted by the International Council of Nurses and translated into 20 languages. Henderson categorized nursing activities into 14 components, based on human needs. Examples are: “Breathe normally; eat and drink adequately”; and “communicate with others in expressing emotions, needs, fears, or opinions.”

Johnson was influential as a speaker, author, teacher, and mentor. As a frequent speaker Johnson’s conviction about the need for nursing science influenced other thinkers. For example, she served on an alumnae panel with Rogers at Vanderbilt and this marked a turning point in Rogers’ writings. Johnson developed the first nursing model-based curriculum in the 1960s using her human behavioral systems model. Later she offered the first graduate course on nursing models in the 1970s. Johnson was on the faculty at University of California at Los Angeles from 1949 to 1978 and taught or worked with other scholars such as Meleis, Mishel, Roy, Gebbie, and Neuman. In a classic publication in 1974 Johnson laid out
three paths to knowledge development: the laissez-faire alternative, or follow the path of medicine, or build the conceptual system of nursing based on the goal of nursing practice. Her belief in defining the goal of nursing practice as the basis for building nursing knowledge had influence in the profession for many years.

During this era two key studies were published that identified the core concepts of nursing. One was based on a review of baccalaureate nursing programs and described the major concepts central to the conceptual models and frameworks used for nursing curricula. Yura and Torres (1975) found that four central concepts emerged, that is, person, society, health, and nursing. These concepts were supported by the discipline for some time and were called nursing’s metaparadigm, although minor variations were introduced. The second was based on scholarly discussions on the definition of the discipline and of nursing science by Crowley and Donaldson. This work developed into a scholarly paper for the keynote address at the 10th Communicating Nursing Research of the Western Council on Higher Education for Nursing (WICHEN) and was included in their 1977 proceedings. The paper was published in Nursing Outlook in 1978 and listed the core themes of nursing that Donaldson and Crowley derived as:

- Concern with the principles and laws that govern the life processes
- Concern with the patterning of human behavior in interaction with the environment
- Concern with the processes by which positive changes in health status are affected

More recently, a paper describing the concepts of a central unifying focus of nursing has categorized nursing concepts as: facilitating humanization, meaning, choice, quality of life and healing in living and dying (Willis, Grace, & Roy, 2008). These updated concepts have been widely quoted (Meleis, 2007; Reed & Shearer, in press; Walker & Avant, 2011). It remains to be seen whether or not this version of articulating the central unifying focus of nursing will be productive in leading knowledge development and implementation in nursing.

Other major theoretical scholars, known as the Grand Theorists of the 1970s, are listed in Box 1.1 along with the earliest date and focus of their work. In considering the focus of each theorist and that of those discussed earlier, Peplau, Henderson, and Johnson, one notices a strong focus on the person as the focus of knowledge development in nursing. Each theorist was conceptualizing the recipient of nursing care. Sometimes theorists have been criticized as being separated from nursing practice and using mainly deductive theorizing. However, knowing these women and their work personally, I take the stance that their thinking was rooted
in nursing practice and aimed at understanding people and how nurses could promote their growth and health.

Although not distinctly separated, there was a group of theoretical scholars known as the Grand Theorists of the 1980s as listed in Box 1.2. Johnson and Rogers are listed first because their work had been widely known through their speaking and handouts. However, the second edition of Riehl and Roy (1980) provided the opportunity to convince both scholars to write a chapter on their theory. Rogers brought a new view of the major concepts of nursing by noting how modern physics did not separate person and environment and using other principles of homeodynamics such as resonancy, helicy, and integrality. Newman, Parse, Fitzpatrick, and Watson began their work based on ideas from Rogers. Leininger, Sisca, and Erickson focused on the role of nursing. Roper, Logan, and Tierney were like the earlier theorists and emphasized the person and how each one lives, but as theorists from the United Kingdom they wanted their work to be distinct from the theorists from the United States.

Also in the 1980s a number of theorists and other authors focused specifically on caring as a core concept of nursing. Leininger did extensive research on cultural care, universals, and diversity. Watson looked further into caring as the essence of practice and a moral ideal; Benner wrote about the relations of caring, stress, coping, health, and caring practices. It was about the same time that other theorists focused on the philosophical perspectives of person with the following emphases:

- Orem concentrated on the person as free agent, emphasizing human choice
- Roy looked at the purposefulness of humankind and a shared common purposefulness
- Newman focused on the pattern of the whole and expanding consciousness

**BOX 1.1**

**THEORY DEVELOPMENT—1970s, MAJOR GRAND THEORIES**

- Myra Levine—Energy Conservation, 1967
- Martha Rogers—Person–Environment Energy Fields, 1970
- Dorothea Orem—Self Care, 1971
- Imogene King—Theory of Goal Attainment, 1971
- Callista Roy—Adaptation Model, 1970
- Betty Neuman—Systems Approach, 1974
- Paterson and Zderad—Humanistic Nursing, 1976
- Margaret Newman—Health as Expanding Consciousness, 1976
In the 1970s nurses debated about whether we need one nursing theory or many. However, from the later 1970s to the end of the century the usefulness of theories in practice, education, and research encouraged pluralism. The work of the scholars mentioned and their colleagues resulted in significant changes in thinking about nursing as a scholarly discipline and knowledge for practice. By the end of the 20th century, we saw the maturing of the discipline with a clarifying of the theoretical focus of nurses as holistic persons. Nursing has a plurality of grand theories and in the 1990s began developing MRTs, as discussed below. The mutual impact of theory and education led to articulating and testing of theories in practice and research.

From the beginning of the 21st century and beyond, there was a movement to reach beyond pluralism to identify the commonalities of the discipline perspective at higher levels of abstraction. The holism of the person could be identified by characteristics commonly shared by nurses, including persons and environment are systems, persons have purposefulness as individuals and groups, parts are manifestations of the pattern of the whole, persons have consciousness and choice, and persons are interdependent. Similarly, in the 21st century, commonalities of nursing as transforming relationships emerged, including nurses as facilitators of well-being who use knowledge and values in a caring relationship; the nurse uses one’s whole self in the process of human to human interaction, mutuality, and encounter; nursing relationships include giving and receiving and involve respect, acceptance, and openness (Box 1.3).

The focus of knowledge development around commonalities of the discipline made unique contributions to knowledge for practice. This development was one way to preserve the lasting effects of the grand theories of nursing, many of which were rooted in practice. The commonalities

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**BOX 1.2**

**THEORY DEVELOPMENT—1980s, MAJOR GRAND THEORISTS**

- Dorothy Johnson—Behavioral Systems
- Martha Rogers—Person, Environment Systems
- Madeline Leininger—Transcultural Nursing
- Jean Watson—Caring Science
- Joan Riehl Sisca—Interaction Model
- Rosemarie Parse—Person–Living–Health
- Joyce Fitzpatrick—Life Perspective Rhythm
- Helen Erickson—Modeling and Role Modeling
- Nancy Roper, Winifred Logan, and Alison Tierney—Model of Living as Model for Nursing

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were useful for further theoretical and philosophical developments focused on a person-oriented discipline. This focus helped to articulate a research agenda and the terminology became the common parlance for describing practice.

**Research Resources**

Theory and research go together, yet in knowledge development for nursing practice they are not always at the same pace for a variety of reasons. As nursing developed an academic discipline to educate nurses in colleges and universities, there was a need for theoretical knowledge as well as knowledge that was supported by research. Along with theories that defined nursing, theories from other disciplines with more established research were combined in nursing education. Still, nurse scholars recognized the need to increase the cadre of nurse researchers that would confirm theories and test knowledge for practice.

Funding for independent research took time to develop. The first nursing grant for research was $600 given to Alice Crist Malone by Sigma Theta Tau in 1936. Government grants focused mainly on nursing organizations and the nursing workforce in the 1940s and 1950s. The American Nurse’s Foundation, founded in 1955, received and administered funds for nursing research. Walter Reed Army Institute of Research in 1957 established a Department of Nursing Research with a particular focus on clinical nursing.

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**BOX 1.3**

**COMMONALITIES OF NURSING FOR THE 21ST CENTURY**

1. The holism of the person:
   - Persons and environment are systems
   - Persons have purposefulness as individuals and groups
   - Parts are manifestations of the pattern of the whole
   - Persons have consciousness and choice
   - Persons are interdependent

2. Nursing involves transforming relationships
   - Nurses facilitate well-being using knowledge and values in a caring relationship
   - Nurses use their whole selves in the process of human to human interaction, mutuality, and encounter
   - Nursing relationships include giving and receiving and involve respect, acceptance, and openness
research. Also in the late 1950s the regional nursing research organizations began to be established. The organizations initially did not fund research but were active in promoting research as a way to spread findings from research. Later these organizations would take on the role of offering both research grants and awards for research. The ANA began holding nursing research conferences in 1965 and in 1970 established the ANA Commission on Nursing Research. This commission established the Council of Nurse Researchers in 1972, which was a major vehicle for promoting nursing research for many years.

Although educational studies were conducted in the 1950s and 1960s, nursing leaders began to express concern about the lack of research in nursing practice. Nursing regional organizations and the ANA Commission on Nursing Research began to set priorities for research that focused on clinical topics for practice. With the increasing number of studies, Nursing Research was published in 1952. Nursing research skills began to improve in nursing in the 1970s and the number of nurses with earned doctorates increased (Polit & Beck, 2012). Several more journals were established in the 1970s, including Advances in Nursing Science, Research in Nursing & Health, and Western Journal of Nursing Research. Sigma Theta Tau, the International Honor Society for Nursing, sponsored national and international as well as chapter research conferences. The organization’s journal (Image, which became the Journal of Nursing Scholarship) became a premier nursing research journal. Clinical nursing research became a focus in the 1980s and 1990s with a variety of clinical nursing journals increasingly publishing research related to clinical specialties. Many nurses received master’s and doctoral degrees in the 1980s and 1990s and postdoctoral education was encouraged.

Federal involvement in nursing research began with the establishment of the Division of Nursing within the Office of the Surgeon General, Public Health Service in 1946. Funding for individual nursing research began in 1956 when the United States Public Health Service (USPHS) awarded nearly $500,000 to researchers for projects in nursing in the first year. At the same time federal support for doctoral fellows became available from the Division of Nursing Resources of the USPHS. This division and some institutes within the National Institutes of Health (NIH) for many years funded nursing research. However, a notable statistic quoted by Burns and Grove (2009) is that although federal funds for nursing research increased significantly to more than $39 million awarded from 1955 to 1976, the funding was not comparable to the $493 million in federal research funds received by those doing medical research in 1974 alone.

Another priority for the 1980s and 1990s was to increase funding for nursing research. The National Center for Nursing Research (NCNR)
was established within NIH in 1985, and in 1993 became the National Institute of Nursing Research (NINR). The story of establishing the NINR included years of hard work, divisions among nurses, political setbacks, including two presidential vetoes by Ronald Reagan. When Congress voted to override the veto, the center was established in 1986 and nursing seized the political victory to become key members of the NIH. Not initially welcomed at NIH, the NINR had an acting director appointed from among the other health scientists, Dr. Doris H. Merritt. By June of 1987 Ada Sue Hinshaw, PhD, RN, became the first permanent director and served until 1994. Hinshaw (with Heinrich, 2011) authored a book chapter on the establishment of NINR as a case study in changing health science policy. Also, to celebrate the 25th anniversary of nursing at NIH, the first nursing history book was published (Cantelon, 2010); this book provides significant details partially taken from oral history interviews of Merritt, Hinshaw, and the current director, Patricia Grady, PhD, RN. Grady’s words in the preface provide a fitting summary of nursing science of this era.

At no time has the nursing profession been transformed more dramatically than in the past thirty years. Behind that revolution, literally millions of nurses have constituted a team of committed actors: clinicians, professional nursing organizations, schools of nursing, and the National Institute of Nursing Research (NINR). Their creativity and cooperation, coupled with the strong support of Congress, fashioned a different nursing profession and moved it beyond procedure to promise, beyond implementation to innovation, and into the mainstream science at the National Institutes of Health (NIH). (Grady, 2010a)

CHALLENGE OF NURSING KNOWLEDGE REACHING PRACTICE

Given the rich heritage of what might be considered a rapid development of knowledge for nursing practice by nurses with increased levels of education, theoretical scholars, and nurse researchers, one might expect outstanding successes for knowledge in nursing practice. Still scholars agree, including Roy and Jones (2007), that the value of knowledge development to date is not debated. Rather what remains a challenge is for nursing to take the lead in advancing a health agenda. The challenge is to make developments in nursing science visible to all.

The approaches used to decrease the gap between knowledge and practice have been significant but many issues remain. Two of these approaches will be highlighted and also critiqued to determine remains
to be done. The NINR emphasis on translational research and the EBP movement are two major efforts to bring knowledge to practice. These movements can be examined to show their major contributions along with remaining questions.

**NINR Translational Research**

Translational research in general refers to the application of knowledge derived from basic health care research to interventions that improve health. In 2006 the NIH initiated a new approach to make translational research a priority by funding a Clinical and Translational Science Award (CTSA) program. By 2010 there were 46 member institutions in 26 states with the goal of 60 research centers when fully funded. Specifically, translational research aims to close the gap and improve quality “by improving access, reorganizing and coordinating system care, helping clinicians and patients to exchange behaviors, make more informed choices, providing reminders and point-of-care decision support tools, and strengthening patient-clinician relationship” (Wolfe, 2008, p. 211). These centers share a vision: (1) to accelerate translational research into treatment for patients to engage local communities in research and (2) to train a new generation of clinical and translational researchers.

In an article on translational research and nursing science, P. Grady (2010b), the director of NINR, emphasized that the perspective of nurse scientists is vital to identifying the most effective strategies to accelerate translational research. She noted that nurse scientists have expertise in research about how individuals respond to illness or adapt to changes. They used data and observations from clinical settings and design and developed basic and applied research. One example Grady provided is positive results from a study of a nurse-led intervention for patients diagnosed with post-stroke depression. The intervention included stroke rehabilitation nurses teaching coping and problem-solving skills and helping participants identify taking part with others in social events and in physical activity.

A detailed example of what is called “from bedside to bench to practice” is given in a description of a series NINR-funded clinical and laboratory studies on improved outcomes for patients who receive tube feedings (Metheny, 2011). New tests were developed to evaluate correct tube placement of gastric versus small bowel. The investigators also identified bedside tests used in the past to detect aspiration during tube feedings as well as a series of studies to attempt to determine effective methods to detect aspiration and reduce aspiration risk. An animal model was used to compare aspiration detection methods. A descriptive clinical study of
aspiration was followed by a study of interventions to reduce aspiration. Of particular note is how this research has been translated into practice. By influencing health care policy the research led to improved outcomes for patients who receive tube feedings. Three major policy statements or recommendations, including the American Society for Parenteral and Enteral Nutrition's enteral nutrition practice recommendations (Bankhead et al., 2009), cited findings of this research. In addition at least nine textbooks in nursing and medicine cite publications of this NINR-funded research.

NINH translational research is a promising movement. However, some observations show certain limitations. The studies affecting practice date from 1990 to 2008 and the policy statements are from 2003, 2005, and 2009. The research had a depth of experience that took an extraordinary amount of time and resources. Second, it is recognized that this is a significant clinical issue, yet it is only one of hundreds of potentially dangerous situations faced by large numbers of patients. This interpretation is supported by the observation that although the Institute of Medicine published Crossing the Quality Chasm (2001), there is little evidence that the challenges to quality have changed much in the intervening years. For example, one type of challenge is overuse, that is, the application of health care services where the potential for harm exceeds the potential for benefit. Yet nurses deal with the ethical issues every day of futile treatment causing suffering to patients. It seems reasonable to take the stand that as the approach of translational research continues to grow, it is relevant to look for other approaches to develop knowledge and translate that knowledge into practice.

**Evidence-Based Movement**

*Research utilization* was the term used in the 1980s and 1990s to deal with concerns about the limited use of research in providing nursing care. Projects on research utilization were conducted by numerous hospitals and professional organizations. The projects were institutional attempts to create changes in practice based on research findings. It was during the 1990s (Polit & Beck, 2012) that research utilization was superseded by the movement for EBP. The history of the EBP movement and some EBP models are discussed in Chapter 13. What is covered here is a synopsis of EBP for the purpose of providing a critique.

EBP is described as a problem-solving approach to the delivery of health care that integrates the best evidence from well-designed studies and patient care data and combines it with patient preferences and values and nurse expertise (Melnyk, Fineout-Overholt, Stillwell, & Williamson, 2010). Commonalities of models for EBP include synthesis of evidence,
implementation in practice, evaluation of impact on patient care, and consideration of the context or setting. EBP relies on systematic review of the literature on a selected clinical issue. Systematic review refers to an analysis of all available literature, consideration of the evidence, and a judgment of the effectiveness of using the best practices reflected in the literature. Often systematic reviews are conducted by teams of researchers and they take long periods of time. However, students and nurses in practice often need to search for evidence on a current issue and can use an approach to meet their needs even if it is not as rigorous as a systematic review (Pearson, Vaughan, & Fitzgerald, 2005).

Supporters of the EBP movement note that its significance lies in providing a higher quality of care, improving patient outcomes at reduced costs and providing greater nurse satisfaction. A second major advantage of EBP is that it offers a framework for lifelong learning for nurses to seek new knowledge to solve problems in an era of rapidly developing clinical changes. Basing practice on the best available evidence is highly valued by health professionals. The approaches of EBP are increasingly used particularly in the United Kingdom, where it began, and in Australia, both of which have developed considerable infrastructure to help with using EBP especially for nurses. There is growing awareness and use of EBP in the United States.

Some professionals are concerned that in efforts to perfect EBP, the advantages of EBP may be exaggerated, and clinical judgment and patient input may be given less attention. Critics note that EBP gives priority to empiric approaches to knowledge without a way of integrating other ways of knowing. Baumann (2010) noted that the limitations of EBP are not routinely discussed. The author raises a number of questions: (1) Is the current evidence base complete and unbiased and can it ever be? (2) Is EBP sufficient to guide clinical decision making? (3) Is it able to be holistic? (4) Does it neglect primary prevention? (5) Does it adequately contribute to the development of theory and science? (6) Does it help develop nursing? (7) Does it respect human dignity, complexity, freedom, and mystery? Pearson et al. (2005) noted that of equal importance to research-generated evidence is the view that it is more important that practice be well grounded in theory. Given this view and the questions and concerns raised, one could propose that additional approaches can be generated to develop knowledge that is basic and useful for nursing practice.

**ALTERNATIVE PROPOSED FOR KNOWLEDGE FOR PRACTICE**

Given the significance of developing and implementing knowledge for practice and the limitations of current approaches, the project staff developed the content and process of generating MRT from a set of related
studies as a significant way to bridge the knowledge-to-practice gap. Providing an alternative makes it possible to have choices among ways to develop and implement knowledge in practice or to complement approaches. MRT supported by studies using the same conceptual framework is explored as a way of cumulating knowledge to be used as evidence for practice. As noted, both a theory basis and research are important for practice, thus this approach can be expected to make an important contribution. This approach can be duplicated by other reservoirs of studies based on conceptual frameworks or grand theories. A major advantage is uniting the strengths of theory and of research as a basis for practice. At the same time the selected research has been strengthened by accumulating studies based on similar concepts, the concepts of the grand theory. However, what is needed further to reach practice is to capitalize on the benefits of MRTs that are closer to practice.

Rationale and Background on MRT Development

MRT has been credited with providing a significant milestone, marking considerable progress in knowledge development beginning in 1991 to 1995 (Meleis, 2007). The significance of MRT lies in its very characteristics. MRTs are closer to practice because they use fewer concepts at a level of abstraction lower than the grand theories. In this way they can be used in given practice settings yet some can generalize across populations and settings. Some examples of MRT theories that are useful across practice settings are Meleis’s theory of experiencing transitions (Meleis, Sawyer, Im, Messias, & Schumacher, 2000) and the theory on uncertainty in illness by Mishel (1990). An example of a more situation-specific MRT is provided by the work of Good (1998), who derived a theory of pain as a balance between analgesia and side effects.

MRT is particularly useful in today’s focus on interdisciplinary teams to meet health care needs for two reasons: (1) MRT articulates the focus of nursing to contribute to interdisciplinary dialogue and (2) such theories also help identify knowledge needed from many disciplines. Consider that because MRT helps to answer questions about the overall mission, goals and nature of the discipline of nursing it differentiates nursing’s contributions from that of other disciplines. For example, an obstetrician sees the delivery of a baby as a medical event, whereas nursing sees the event as a life transition for a mother and family. Meleis noted that MRT can have a transformational effect on the entire discipline of nursing. Development of theories at the middle range can be considered a clear indication that nursing as a discipline has undergone a turning point toward producing
more accessible and functional theories that guide productive research programs and provide theory and research-based evidence for practice.

The connection of MRT to research is important to knowledge development and providing evidence for practice. MRT provides key concepts and the relationships among concepts that are theoretically sound. In addition, the concepts translate to measurable variables. The relationships among the variables can be tested in research. Thus some authors noted that MRT can be used to derive research that provides evidence for practice. The findings of research that test MRT provide evidence for the relational statements of the theory. The statements with the supporting evidence can be used to derive nursing approaches to practice, as in the example of the MRT of the peaceful end of life described on page 20-21. The use of MRT as a basis for research leads to confirming knowledge for practice. The simplicity of the theories promotes their translation to practice. The circular relationship of theory to research to practice that applies to all theory is particularly evident in MRT. An example of this cycle is the work by Kolcaba (1994). With clinical changes such as hospice and long-term care, the significance of comfort came to the fore of nursing concepts. Kolcaba first clarified the concept and developed relational statements or propositions. The theory was tested in a number of research projects. From these, specific recommendations for practice were promoted, such as guided imagery to promote comfort for women with early breast cancer who were receiving radiation therapy.

The theory, research, practice cycle also implies the several ways that MRTs are developed. MRT can be derived from theory, research, or practice. Deriving MRT from theory takes two possible forms. MRTs are derived from grand theories or they can combine existing nursing and non-nursing theories. Box 1.4 lists some examples of MRT derived from grand theories,

### Box 1.4

**MIDDLE RANGE THEORIES DERIVED FROM GRAND THEORIES**

- Theory of coping and adaptation processing—Roy Adaptation Model
- Theory of shared identify of groups
- Theory of moral distress
- Urine-control theory
- Theory of home care effectiveness
- Theory of perception of dissonant pattern—Rogers’s Person–Environment Theory
- Theory of restorative subsystem—Johnson’s Behavioral Systems Model
- Theory of therapeutic intention—Levine’s Energy Conservation Framework

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also called models and frameworks (McEwen & Wills, 2011; Roy, 2011). Each of these MRTs focuses on specific concepts of the grand theory and further develops the ideas to create an understanding of the relationships of concepts within a more narrow range. For example, one author took only the restorative subsystem (Grubbs, 1980) of Johnson’s eight behavioral subsystems. Another theorized with Rogers’s work only on the patterns that are dissonant and how they are perceived. These few examples illustrate one approach to MRT, that is, taking established concepts from a grand theory and using these as the basis for creating a theory that is closer to practice and that can be tested in research. The option of combining nursing and non-nursing is exemplified by Pender’s work (1996). In developing a MRT of health promotion, the theorist used behavioral science theories, such as expectancy value theory and social cognitive theory, along with a nursing perspective. Broad theories, whether grand nursing theories or theories about people from related disciplines, are rich sources for creating MRT. When these theories are distilled to key related concepts they can be more readily applied to practice.

There are a number of ways that research is used to create MRT but perhaps the most widely known and used is the grounded theory approach, a well-developed qualitative research method. Developed over time by Strauss and colleagues at the University of California at San Francisco, grounded theory is an inductive process that works from specific empirical observations to generalizations about the data. The researcher is immersed in the clinical data of the project and generates new theoretical insights. The philosophical basis for grounded theory is symbolic interactionism, which explores how people define reality and how their beliefs are related to their actions. Reality is created by attaching meaning to situations. Meanings are shared in interactions. Interactions are the focus of observations in grounded theory. In the analysis process, the categories and properties emerge, develop in abstraction, and become related. The accumulating interrelations form the central grounded theory, which, because of the richness in interpreting meanings, identifies new concepts, patterns, processes, and explanations. An example of using grounded theory to create MRT is the work by Hamilton and Bowers (2007) to develop the theory of genetic vulnerability.

One way that MRT is derived from practice is to use practice guidelines or standards of care. McEwen and Wills (2011) noted that this approach is not used often, but they did find a few examples. In the exemplar they provide, the authors discuss how Rutland and Moore (1998) developed the theory of the peaceful end of life from standards of care of terminally ill patients. In the first step of the process of developing the theory the authors defined the theory’s assumptions based on the standards of care.
In the second step they performed what they called a statement synthesis in which five outcome criteria were developed. The outcome criteria were those factors that contributed to a peaceful end of life. These five outcomes were: not being in pain, experience of comfort, experience of dignity and respect, being at peace, and closeness to significant others and persons who care. In step 3 conceptual definitions were written for each outcome criteria. Step 4 included defining relational statements between the outcome indicators and nursing interventions, that is, prescriptors were added to facilitate the outcomes expected. Theory synthesis in step 5 combined the relational statements into an integrated theory that was represented in a schematic diagram of the relationships in the theory.

**Process for Using RAM Research to Generate MRT and Evidence**

The team considered their understanding of the importance and place of knowledge development as described previously and concerns to make greater strides in today’s health care to have nursing knowledge influence practice. A remarkable opportunity was presented as the Roy Adaptation Association Executive Board started a scheduled update of the review of research based on the Roy model. Given the significant cycle of theory, research, and practice it seemed a timely task to extend the review to include generating MRT, providing evidence for practice from the studies. Based on this work it would then be possible to provide recommendations that would contribute toward having nursing knowledge take the lead in advancing a health agenda as called for by nurse leaders.

Based on this conviction, the team began to outline an alternative process for developing knowledge for practice. The outline for this project included six steps. The large database of studies based on the Roy adaptation model was collected and analyzed. Initial screening identified three basic facts about each document retrieved. The work had to be (1) published research, including dissertations and theses; (2) retrievable in English; and (3) used the Roy adaptation model. The accepted works were submitted for analysis. A description of each study was created in a common format. Each study was evaluated by criteria for quality of quantitative or qualitative research, respectively. This process is described in greater detail in Chapter 2.

Given the pool of studies analyzed by a larger team, four authors took on the task of organizing major topics for MRT development. This involved using the purposes/aims of the studies to group those that addressed similar topics. Four foci for adapting were identified and a broad category of general coping was added. The MRTs to be created are general coping,
adapting to life events, adapting to loss, adapting in chronic conditions, and adapting families. The creating of the broad categories was influenced admittedly by the interests and background of the theorist, Roy, as the project director. Similarly, the steps of the process outlined depended on the unique experience and understandings of the theorist, including literature reviewed. The process also included dialogue with the other scholars whose assignments were in their particular areas of expertise and those who worked on the analysis who had insights into the areas of strength within the large body of research.

With the topics selected, the team worked on proposing the process for using the Roy adaptation model’s research for developing MRT and providing evidence for practice. The six steps outlined in Box 1.5 were derived as the process for generating MRTs from the research. These steps were aligned with previous related work and seemed to meet the needs of the project. First each assigned author selected studies that were clustered together by similarities of content. There was obvious overlap but decisions were made to keep the integrity of each particular MRT in progress. The authors describe the basis for the decisions of study selections as step 1 within each chapter of Part III. In step 2 major concepts were identified using the studies as observations. Several approaches were tried, but the one that worked for all chapters was to use a generic systems model as Roy describes. The stimuli affect the coping strategies that lead to adaptive outcomes.

Sometimes step 3 could be combined with step 2 because as concepts were identified the level of generality became an issue. The authors worked to get them at the MRT level. The concepts had to be discrete and observable, but at a level of abstraction for this project that could be generalized

<table>
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<th>BOX 1.5</th>
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<tr>
<td><strong>HOW MIDDLE RANGE THEORIES ARE GENERATED FROM RELATED RESEARCH STUDIES</strong></td>
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<tr>
<td>1. Studies are selected that cluster together by similarities.</td>
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<td>2. The studies are used as observations, are classified, and major concepts identified.</td>
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<td>3. The concepts are discrete and observable, but at a level of abstraction that can be generalized across clinical situations.</td>
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<td>4. The concepts are used to draw a pictorial schema of the interrelated concepts.</td>
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<tr>
<td>5. The identified concepts are interrelated in theoretical statements or propositions.</td>
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<tr>
<td>6. The findings from the research are used to provide evidence to support the new MRT.</td>
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across clinical situations. For step 4 the concepts were used to draw a pictorial schema of the interrelated concepts, and in step 5 the interrelated concepts were spelled out in theoretical statements or propositions. Again, the sequence of the author’s approaches may vary, but the steps were all completed and are labeled consistently, using the same numbers for the sake of the reader following the process. Similarly, each chapter completed step 6 by identifying the findings from the research that provided evidence to support the new MRT, although the evidence may have been integrated into a previous section.

The purpose of creating the MRTs is to impact practice. The six-step process provided the syntheses of evidence for Chapter 13 to show how the work can be used as EBP. The definition of EBP that Roy (2009) introduced provides for looking at three possible levels of readiness to implement in practice. Category 1 proposes that certain evidence is ready for practice. The criteria are that a proposition is supported by more than one study; the support noted is unequivocal support and there is a low risk, but a high clinical need. Category 2 requires that advanced practice specialists examine the evidence to see whether it is ready for practice. This category is used when a proposition is supported, but the generalizability is not clear or the risk is not clear, but there is a high clinical need. The final category means that the work is not ready to be used as evidence for practice. This is used when the evidence shows mixed support for propositions, generalizability is unclear, and/or there is high risk. In the review of 163 studies based on the RAM from 1970 to 1994 published by the same group (Boston-Based Adaptation Research in Nursing Society [BBARNS], 1999) using these criteria, 52% studies had high potential for implementation in practice. Other studies were recommended for further clinical evaluation or for additional testing. In this book the determination was not made based on individual studies, but rather based on the evidence for the MRT as further explained and illustrated in Chapter 13. In addition, each chapter proposes ways that the knowledge created can impact changes in practice and/or policy.

CONCLUSION

This chapter introduces the important topic of nursing knowledge for practice. The historical background provided a basis for examining current issues in the gap between nursing knowledge and implementation in practice. After exploring major movements to close this gap, some remaining questions led to proposing a unique approach to relating theory to practice by way of research. A fresh approach to processes for knowledge development links theory, research, and practice in new ways as an attempt to impact changes in practice.
REFERENCES


