Neuman's model has been described by Walker and Avant as a grand nursing theory. A grand theory consists of a global conceptual framework that defines broad perspectives for practice and includes diverse ways of viewing nursing phenomena based on these perspectives. As a grand theory, the Neuman Systems Model provides a comprehensive foundation for scientific nursing practice, education, and research.

The Neuman model has attained acceptance throughout the world and provides an ideal framework for health initiatives to address the World Health Organization's goal of health for the world community. The model is used extensively in the United States, Canada, Australia, Brazil, Costa Rica, Denmark, Egypt, England, Finland, Ghana, Hong Kong, Iceland, Japan, Korea, New Zealand, Portugal, Puerto Rico, The Republic of China, Spain, Sweden, Taiwan, Wales, and Yugoslavia. As an example, the model was used to structure the World Health Organization's Collaborative Center for Primary Health Care Nursing in Maribor, Yugoslavia (Slovenia).

The model has been adapted equally well to all levels of nursing education and to a wide variety of practice areas. It adapts well transculturally and is used extensively for public health nursing in other countries. The model is the most widely accepted model for community health nursing in the United States and Canada.

Ongoing development and universal appeal of the model are reflected in the biennial International Symposia of the Neuman Systems Model. The first symposium was held at Neumann College in Aston, Pennsylvania (1986). Subsequent symposia have been held in Kansas City, Missouri (1988), Dayton, Ohio (1990), Rochester, New York (1993), Orlando (1995), Boston (1997), Vancouver, British Columbia (1999), and Salt Lake City, Utah (2001). The ninth symposium is scheduled for 2003 in Pennsylvania. Each symposium shows increased participation from more countries of the world and other disciplines beyond nursing.

Practice

The Neuman Systems Model has broad relevance for current and future nursing practice. Use of the model by nurses facilitates goal-directed, unified, wholistic approaches to client care, yet it is also appropriate for multidisciplinary use to prevent fragmentation of client care. The model delineates a client system and classification of stressors that can be understood and used by all members of the healthcare team. Increasingly, other health disciplines are finding the work beneficial.

Neuman has developed several instruments to facilitate use of the model. These instruments include an assessment and intervention tool to assist nurses in collecting and synthesizing client data, a format for prevention as intervention, and a format for application of the nursing process within the framework of the Neuman Systems Model.

The Neuman Nursing Process Format consists of three steps: (1) nursing diagnosis, (2) nursing goals, and (3) nursing outcomes. Nursing diagnosis involves obtaining a broad, comprehensive database from which variances from wellness can be determined. Goals are then established by negotiation with the client for desired prescriptive changes to correct variances from wellness. Outcomes are determined by nursing intervention through the use of one or more of the three prevention-as-intervention modes. Evaluation then takes place either to confirm the desired outcome goals or to reformulate subsequent nursing goals.

Fawcett has incorporated Neuman's Nursing Process Format and Prevention as Intervention Format into an outline (Box 18-2) to illustrate steps of the nursing process based on the Neuman Systems Model.

The breadth of the Neuman model has resulted in its application and adaptation in a variety of...
nursing practice settings with individuals, families, groups, and communities. Numerous examples are cited in Neuman's books. The model has been used successfully with clients in many settings, including hospitals, nursing homes, rehabilitation centers, hospices, and childbirth centers. The model was selected for a comprehensive community nursing center in Rochester, New York because it facilitates client-centered care and also because it has proven strengths as a model for community practice. The model's wholistic approach makes it particularly applicable for clients experiencing complex stressors that affect multiple client variables. Black, Deeny, and McKenna used the model as a framework to guide nurses in preventing and alleviating sensori-strain in intensive care patients. Bowman studied sleep satisfaction, perceived pain, and psychological concerns in elderly patients having hip surgery. One group had planned hip replacement and the other group had unplanned emergency surgery following hip fracture. Black, Deeny, and McKenna found differences between the groups although they had similar treatments and similar postoperative care. SchlientzboD applied the model as the organizing framework to plan care at primary, secondary, and tertiary levels for patients in a long-term care facility. Neuman's model provides a systems perspective that enables nurses to assess and care for the family unit as a client. Issel used it as the theoretical framework for a comprehensive case management program for obstetrical client families. Within the broader context of the caregiver unit as a system, Jones identified the intrapersonal, interpersonal, and extrapersonal stressors of primary caregivers of persons with traumatic head injuries. Jones found positive correlations between both intrapersonal stressors and interpersonal stressors and the caregiver's changing stress level. Lin, Ku, Leu, Chen, and Lin described the interrelationships among stress, coping behavior, and health status in family caregivers of hepatoma patients. They reported that the greatest stress among family caregivers was related to characteristics of the disease. Reed used the model to describe the family as a client system based on clinical data and the experiences of practicing family nurses. Picton used the model with emergency care patients to assist nurses to view them wholistically as part of a family system. The Neuman Systems Model is used in community-based practice with groups and in public health nursing. Anderson, McFarland, and Helton adapted the model to develop a community health needs assessment in which they identified violence toward women as a major community health concern. Mannina used the model as the conceptual framework for a study to define an effective testing protocol for elementary school-aged children. Taggart and Mattson surveyed white, Hispanic, and African-American women in public health and low-income clinics to determine whether battering during pregnancy resulted in a delay in seeking prenatal care. They found that women in the battered group sought care 6.5 weeks later than did women in the nonabused group, with a similar delay in each ethnic group. Wilson used the comprehensive community health needs assessment based on the Neuman Systems Model to determine that cardiovascular disease was identified as the priority health concern among residents of a small Midwestern city. The Neuman Systems Model is used effectively in advanced practice nursing. Barker, Robinson, and Brautigan used the model in evaluating whether psychiatric nurse home visits could decrease hospital readmission rates of patients with depression. They found a
substantial reduction in readmissions in the group that received psychiatric nurse home follow-up. Dwyer, Walker, Suchman, and Coggiola31 used it as the basis for a collaborative practice by nurse practitioners and physicians at the University of Rochester community nursing center. Hassel147 integrated the Neuman Systems Model and medical perspectives to improve the management of depression by nurse practitioners. Martin 69 applied the model to the practice of nurse anesthesia using specific examples of the nurse anesthetist's role. The model is being studied and applied in other disciplines, such as physical therapy.9" 14 Further research continues to validate its applicability beyond nursing.

**Education**
The model has been accepted in academic circles and is used widely as a curriculum guide oriented toward wellness. It is used at all levels of nursing education throughout the United States and in other countries, including Australia, Canada, Denmark, England, Korea, Kuwait, Portugal, Taiwan, Holland, and Japan.* The model's wholistic perspective provides an effective framework for the education of generic nursing students from diploma, associate, and baccalaureate programs. Lowry and Newsome66 reported on a study of 12 associate degree programs that use the model as a conceptual framework for curriculum development. The results indicated that graduates use the model most often in the roles of teacher and care provider and that they tend to continue practice from a Neuman Systems Model-based perspective following graduation. Neuman's model has been selected for baccalaureate programs on the basis of its theoretical and comprehensive perspectives for a wholistic curriculum and of its potential for use with the individual, family, small groups, and community. Neuman College Division of Nursing was the first school to select the Neuman Systems Model as its conceptual base for its curriculum and approach to client care in 1976. The faculty has developed an assessment and intervention tool based on Neuman's framework and has developed clinical evaluation tools based on Neu-man's model and Bondy's Evaluation Format. Mirenda72 has formulated a set of questions related to graduates' perceptions and continued use of the model. The University of Pittsburgh in Pennsylvania had one of the first baccalaureate nursing programs to implement the model in an integrated curriculum.55'82 The model has been used at Lander University in Greenwood, South Carolina as the framework for baccalaureate nursing education since 1987.40 Its selection by the faculty was based on its wholistic perspective and on its potential for use with community aggregate populations. The model is used as a comprehensive framework to organize data collected from maternity patients by undergraduate nursing students at the University of South Florida.63 At the University of Texas-Tyler, the model is used as the unifying construct for the Bachelor of Science in Nursing program. Neuman's levels of prevention as intervention are used to level content in courses across the curriculum.54 The Minnesota Intercollegiate Nursing Consortium (MINC), composed of three private church-related colleges, has developed a cooperative baccalaureate nursing program that uses the Neuman Systems Model as its organizing curriculum framework. Over time, MINC- faculty have engaged in the evaluation of the utility of the model, affirming its value."-

The model has demonstrated its effectiveness in supporting the conceptual transition among levels of nursing education. Hilton and Grafton 4" discussed its application as the framework for the transition from diploma to associate degree education at the Los- Angeles -County Medical - Center School of Nursing. Sipple and Freese'08 described the transition from associate degree to Neuman Systems Model-based baccalaureate education at Lander College in Greenwood, South Carolina. At the University of Tennessee at Martin, the model provided the curriculum framework for a Bachelor of Science in Nursing degree program initiated in
1988; Strickland -Seng11' described its use as the basis for clinical evaluation of students in their Bachelor of Science in Nursing degree program.

The Neuman Systems Model has been used effectively in postbasic nursing education and beyond. Bunn19 -described the development and implementation of a community mental health nursing course based on Canadian healthcare principles for registered nurses enrolled in a Bachelor of Science in Nursing program at the University of Ottawa. The model enabled students to study selected client populations, such as elderly Chinese, as a high-risk aggregate and to plan culturally relevant health prevention activities at primary, secondary, and tertiary levels. Martin 69 stated that the transition of nurse anesthesia education into graduate nursing programs will require -incorporation of advanced nursing theory and applied the Neuman Systems Model to the practice of nurse anesthesia.

Multidisciplinary use of the model continues to grow. For example, the model is currently being implemented beyond nursing in Kuwait and Jordan.89 The model's emphasis on wholism, systems, prevention, and wellness prompted the Commission on Accreditation in Physical Therapy Education (CAPTE) to adapt it to conceptualize sections of the CAPTE evaluative criteria that address the organization and resources required for a physical therapy program. 14 Lowry, Burns, Smith, and JacobsonTM described an interdisciplinary approach to training health professionals based on experiences with a multidisciplinary team of faculty from four disciplines.

The model's inclusion of both client perception and nurse perception makes it particularly relevant for teaching culture concepts. The model is used at California State University, Fresno to study the significance of culture and how culture influences each of the five client system variables."0 Bloch and Bloch 13 described a format that uses the model to-assist students to assess clients and provide culturally appropriate care across cultural barriers. Capers” stated that the model can foster the delivery of culturally relevant care because its wholistic perspective includes the cultural aspects of client systems.

The Neuman Systems Model is used to provide the conceptual framework for multiple levels of nursing and healthrelated curricula around the world. Acceptance by the nursing community is clearly evident.

Research
Testing the efficacy and usefulness of nursing models through controlled research is imperative for nursing to advance as a scientific discipline. Research on the components of the model for additional explication and generation of testable nursing theories through research are examples of the Neuman model's potential contribution to research activity and nursing knowledge. 35,36,73,101,103 Rules for Neuman Systems Model-based nursing research have been specified by Fawcett, a Neuman model trustee, based on the content of the model and related literature.90

Neuman 85,90 reports that her model is one of the three-most frequently used models for nursing research. Increasing empirical use of the model is evident from research conducted in the nursing community. In the third edition of The Neuman Systems Model,88 Louis58'59'60 discussed the model's use in nursing research and identified recent published studies using the model. The third edition also contains an annotated bibliography of selected studies conducted from 1989 to 1993, with an appendix listing of research studies published in journals, dissertations, and masters' theses.

The Neuman Systems Model has provided the conceptual framework for recently published research on clients across the life span, on nurses and lay persons as caregivers, and on nursing education and administration. Additional research studies using the model are listed in the bibliography following this chapter.
Nursing research using the model has advanced the level of knowledge of women's health issues. Marlett examined the history of breast-feeding experiences in women with breast cancer; the results supported previously reported risk factors for developing breast cancer.

Monahan studied pregnant drug-using females to develop a profile of social and demographic characteristics, STD risk behaviors, and use of prenatal care and substance abuse treatment. Gigliotti studied role stress in women who are both mothers and students and found that mothers-as-students experience multiple role stresses.

Several studies have been reported on the influence of ethnic differences on women's health and healthcare needs. Doherty explored spousal abuse from an African-American female perspective; the results identified five stages of abuse and coping. The five stages were: (1) transference of rules, when the victim learns rules of intimate behavior from her family of origin; (2) beginning abusive period, when the couple has begun living together and violence begins; (3) rage and reality, when attempts to stop the violence have failed and anger predominates; (4) transition, when the victim leaves the relationship; (5) stabilization and integration, when the victim stabilizes her life. Jennings explored predictors of intention to obtain pap smears in African-American and Hispanic women. Hanson studied beliefs about smoking behavior in African-American, Puerto Rican, and white women. The findings indicated differences between smokers and nonsmokers and some differences among ethnic groups. Taggart and studied the impact of battering on seeking prenatal care in white American, Hispanic, and African-American women. They found that the incidence of abuse was not significantly different among the ethnic groups and women in the battered group sought prenatal care 6.5 weeks later than did women in the nonabused group.

The model has been used extensively to guide research to enhance the nursing care of clients with specific physiological stressors. Flannery reported a study using the model as a framework to adapt a cognitive functioning assessment tool for patients with traumatic brain injury; the purpose is to provide a tool for planning appropriate nursing care. Bowman studied pain and sleep in elderly orthopedic surgery patients within the context of the surgery experience (as planned or unplanned).

The aging population and the shift from hospital-based care to home-based care has resulted in the need for research on the stressors and special needs of caregivers of the patients who require complex care in nonhospital settings. Researchers have used the model to study selected variables in the caregivers of dependent elderly and in patients with traumatic head injury and hepatoma.

The biennial Neuman Systems Model Symposia provides a forum for presentation of research (completed and in progress) using the model. At the sixth (1997) and seventh (1999) symposia, five studies were reported on women's health issues. Four studies were reported on use of the model in nursing Two studies were reported that dealt with nursing management issues and two on chronic illness management and long-term care. In response to earlier identification of the spiritual variable as an area for further development, five studies on this component of the model were reported. Research projects that were reported at the fourth (1993) and fifth (1995) symposia are cited in the previous edition of this chapter.

Fawcett has set forth guidelines for research studies based on the Neuman Systems Model. Synthesizing the results of such studies will increase understanding of the model's effectiveness in enhancing client system stability.

FURTHER DEVELOPMENT
A conceptual model identifies relevant phenomena and describes the interrelationships in
general and abstract terms, representing the initial step in the development of theoretical
statements. In 1983, the Neuman Systems Model was described as being at a very early
stage of theory development." However, findings from Louis and Koertvelyessy's 1987 stud
Y62 and from subsequent research 16,36 support increasing utility of the model for theory
development in nursing.
The model diagram has remained unchanged because Neuman has received continuous
positive feedback on its completeness. The breadth of the model appeals to those in nursing
because it allows for much creativity within its structure.86
Most nursing models have not been researched sufficiently to establish their validity fully.
Although the Neuman Systems Model has proved itself empirically, additional research is
indicated to clarify and validate several components of the model.
Earlier evaluation of the model stated that two components needed further development: (1)
the spiritual variable and (2) the created environment. Neuman views the spiritual variable as
an innate component of the basic structure; consideration of the spiritual variable is necessary
for a wholistic perspective and for caring concern for the client.88 Description of the spiritual
variable was expanded significantly in The Neuman Systems Model, third edition, 28.41 and
more recent research studies were reported at the Seventh and Eighth Neuman Systems Model
Symposia.
Neuman's concept of health and her view of the relationship between client and environment
are two of the areas identified for further development and clarification. Fawcett 37 suggests
clarification of the concept of health by identification of wellness and illness as polar ends of
a continuum rather than as dichotomous conditions. Further, Fawcett37 states that viewing
client-environment interactions as a dynamic equilibrium, as a steady state, and as
homeostasis is logically incompatible and that Neuman should specify which view best
represents her conceptualization of client-environment interaction. -
Further research is also indicated regarding the lines of defense and resistance, vulnerable
aggregate client populations, providing culturally sensitive nursing care across cultural
barriers, and development and evaluation of primary prevention
80,81,82,89
programs.
Future validity of the model depends on extending the development and testing of middle-
range theory from the model. Neuman and Koertvelyessy3' have identified two theories being
generated from the model: (1) the Theory of Optimal Client System Stability and (2) the
Theory of Prevention as Intervention. Breckenridge" has described the use of the model to
develop middle-range theory through research based on practice with nephrology patients.
A Neuman Systems Model Trustee Group was established in 1988 to preserve, protect, and
perpetuate the integrity of the model for the future of nursing. Its international members,
personally selected by Neuman, are dedicated professionals. 12 The home of the Neuman
Archives has been established at Neumann College Library at Aston, Pennsylvania.71'72
Smith and Edgil" have proposed the creation of an Institute for the Study of the Neuman
Systems Model to formulate and test theories within the model. A website has been placed on
the Internet on the Neumann College home page at www.neumann.edu, Undergraduate
Programs, Nursing.
CRITIQUE
Neuman developed a comprehensive nursing conceptual model that operationalizes systems
concepts for nursing relevant to the breadth of nursing phenomena. It should also remain
relevant to future nursing needs as identified by the American Nurses Association and the
World Health Organization. The model's wholistic perspective allows for a wide range of
nurse creativity in its use. Neuman's own critique notes that prior criticisms, such as those claiming its concepts are too broad, have been discounted. The model is congruent with the general trend toward wholistic systemic thinking in nursing. Its comprehensive and flexible nature will allow for future structuring of all nursing activities "as it has proven to do in the past, 86

Clarity
Neuman presents abstract concepts that are familiar to nurses. The model's concepts of client, environment, health, and nursing are congruent with traditional nursing values. Concepts defined by Neuman and those borrowed from other disciplines are used consistently throughout the model.

Simplicity
Multiple interactions and interrelationships comprise this broad systems-based model; they are organized in a complex, yet logical manner and variables tend to overlap to some degree. The concepts coalesce, but a loss of theoretical meaning would occur if they were completely separated. Neuman 81 states that the concepts can be separated for analysis, specific goal setting, and interventions. The model can be used to delineate further the systems concept for nursing and also to describe various other healthcare systems. It can be used to explain the client's dynamic state of equilibrium and the reaction or possible reaction to stressors. Using the prevention concept within the framework, the origin of stressors can be predicted. The model can be used to describe, explain, or predict nursing phenomena. The model is complex in nature; therefore it cannot be described as a simple framework, yet nurses using the model describe it as easy to understand and use across cultures and in a wide variety of practice settings.

Generality
The Neuman Systems Model has been used in a wide variety of nursing situations; it is readily adaptable and comprehensive enough to be useful in all healthcare settings, including administration and research. Other related health fields can use this framework because it is systemic and it emphasizes the client system as a whole. The social goals and utility of the model are congruent with present social values (for example, wholistic care, prevention, and systems concepts).

Some concepts are broad and represent the phenomena of one person as a client or a larger system and others are more definitive and identify specific modes of action, such as primary prevention. The subgoals can be identified as broad nursing actions. The broad scope of this model allows it to be considered general enough to be useful to nurses and other healthcare professionals in working with individuals, families, groups, or communities in all health care settings.

Empirical Precision
Although the model has not been completely tested to date, nursing scientists are demonstrating major interest in and use of the model to guide nursing research. Early work by Hoffman49 described a list of variables and selected operational definitions that were derived from the model. Louis and Koertvelyessy's 1989 survey62 on the use of the model in nursing research and subsequent research reports provides further documentation of increasing empiricism with the model. Continued testing and refinement will increase the model's empirical precision as the research process, analysis, and synthesis of findings from multiple studies are completed. 13

Derivable Consequences
Neuman's conceptual model provides the professional nurse with important guidelines for
assessment of the client system, utilization of the nursing process, and implementation of preventive intervention. The focus on primary prevention and interdisciplinary care facilities is futuristic and improves quality of care. The Neuman nursing process fulfills current health mandates by involving the client actively in negotiating the goals of nursing care. Another derivable consequence of the model is its potential to generate nursing theory; for example, the theories of optimal client stability and prevention as intervention. The model concepts are relevant to twenty-first century health professional trends. Through continued theory development and research with the model, nursing can expand its scientific knowledge. According to Fawcett, the model meets social considerations of congruence, significance, and utility. The model is broad and systemically based. It lends itself well to a comprehensive view within which nursing can be responsive to the world's rapidly changing healthcare needs.

The Neuman Systems Model provides an appropriate nursing framework and a comprehensive approach to contemporary and future goal phenomena and concerns facing nursing and healthcare delivery in the twenty-first century. A Trustee member, Linda Drew (now deceased), wrote a letter to Neuman, which appropriately draws closure to this chapter and shares some of the excitement that is felt as the nursing profession advances the scientific foundation of its knowledge base:

In my opinion, the Neuman model is not only alive and well, but will have a very long shelf life because it is so adaptable and continues to provide a very pragmatic framework for dealing with a whole host of issues in nursing practice, education, administration and research. This along with the bold commitment of nurses and other healthcare providers to continue using this framework will guarantee a very healthy, exciting future for the model.
Neuman's system model has been applicable in the academe because of its holistic approach, as it has been widely used both by nursing students and educators. As the model demonstrated effectiveness in conceptual transition among levels of nursing education, it has formed a basis for continuing study after graduation thus facilitating growth of nursing knowledge and practice as it is integrated in nursing curriculum.

Research incorporated the use of testing the efficacy and usefulness of the model in different areas and scope of the nursing practice. It's been noted that Neuman's model has been one of the widely used framework used in nursing research as it guide the enhancement of nursing care. Nursing research expanded the used of the model in the hospital, health clinics, homes, community and schools.

ANALYSIS
Simplicity
Neuman's System Model is viewed to have contradicting reactions. Others say that her model was not simple enough but others believe that it can be easily understood and used. Its simplicity for others can be used to understand the health of a person within the health continuum. Identifying the related stressors and possible reactions it can produce to a person helps to simply understand a client's well-being. Using her model, nurses and other health care professionals can also have prevention and restoration activities for a person if used correctly.

Generality
Neuman's theory can be used in different health care settings in which the nurse is one of the facilitators. Her theory was comprehensive and adaptable for the nurse to use in the different practice settings. Its applicability is congruent with the social, physical, physiological, psychological, spiritual aspects of a person which is very holistic.

Empirical Precision
Some critiques believe that the use of Neuman's theory increases the collection of empiricism
within the scope of the nursing practice. Therefore, it is predicted that the enhancement of the
theory has an increasing chance. Furthermore, this prediction will improve nursing practice as
it is being widely used in different practice settings.
Derivable Consequences
Neuman's theory provides guidelines for a professional nurse to have an accurate assessment,
planning, Implementation and evaluation of the planned care for their clients. Also, its
characteristics are applicable to the 21' century, therefore it can be useful for basis of research
thus producing new nursing knowledge that can significantly utilized within the scope of the
nursing practice.
Application of Neuman's System Theory
Margarita is a 48 year-old nursing educator who is known for her workaholic, hard-line and
traditional approach in dealing with students and co-faculty. She starts her day by leaving the
house very early from Bulacan to Manila and begins work by delegating various tasks with
firm expectations with deadlines somewhat unachievable. If these expectations are not met,
she responds with pressure and intimidating remarks. Students and instructors alike have their
reservations toward her methodologies, yet are constrained nonetheless to work with her.
Quite often, Margarita exhibits weird mannerisms and behaviors which appear strange to
people around her. She misses breakfast and lunch very often and sleeps late at night while
doing work. She has no time for Her family and focuses too hard on achieving her
preconceived objectives. Two days before admission, she felt amplified rage and snapped
over a very small issue. A week later, she appeared in the office wearing colorful clothes and
exaggerated make-up. She was very energetic, having sudden outbursts of laughter, with
some flights of fancy. After work, she never came back. Her family called up the hospital a
few weeks later to seek assistance. They reported that she locked herself in the room, refusing
to eat, and most of time quiet and staring blankly on-the wall
Assessment
The nurse, utilizing Neuman's System Model, assessed the stressors (work, personality, and
attitude) that are contributing to Margarita's condition. She found out that Margarita is not
anymore able to handle these stressors, thereby stretching the lines of defense. Without
seeking help from her support systems, she was not able to maintain her flexible line of
defense. Thus, the nurse concluded that the root cause of the client's illness is the failure to
maintain the different lines that serves as shock absorber of various stressors and balance of
health variables.
Planning
Since Margarita is not emotionally stable to formulate goals with the nurse, the healthcare
team, in coordination with her support system, took the initiative to direct adequate care.
Thus, there is a restoration of her lines of defense.