
NEUROSCIENCE NURSING

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This book is dedicated to my parents who provided the initial encouragement and support to pursue a nursing career, especially my mother, Ruth Beede; to my husband Bob who inspired me to continue my nursing education and pursue a graduate degree; to my three children, Belinda, Scott, and Chris, for their patience, love, and understanding in my dual role as mother and nurse; to all the nursing students who shared with me the joy of learning; and especially to my patients who taught me the realities of neuroscience nursing and the vital role of the neuroscience nurse.

Foreward



Patients with neurologic disorders represent a challenge to the nurses who care for them. A significant part of the challenge is related to a lack of understanding of the nervous system and the pathophysiology of nervous system disorders. Therefore nurses whose chosen careers are neuroscience nursing will find this comprehensive text extremely valuable as a reference and in their clinical practice.

Ellen Barker is an educator, neuroscience clinical specialist, journal editor, and consultant. She has combined the expertise of 26 leading practitioners in the field for this textbook on neuroscience nursing. The text is an unprecedented compilation of knowledge that is comprehensive, up-to-date, and provides in-depth information on all aspects of neuroscience nursing.

The book is built on a foundation of neuroanatomy, normal physiology, assessment, and neurodiagnostic studies that is essential for an understanding of neurologic disorders. Separate chapters on neurologic disorders provide detailed descriptions from pathophysiology to an in-depth analysis of the disorder, including High-Risk Nursing Diagnoses and Pathways for Recovery. The importance of the nursing role is stressed throughout the book, and each chapter includes a special section on patient and family teaching, which is a primary responsibility of the neuroscience nurse. Both the novice and the expert practitioner will find in this nurse-oriented format the information necessary to address potential and actual patient responses and provide the highest quality care.

Neuroscience Nursing brings to our field both a new approach and information never before included in a

comprehensive textbook. A chapter on HIV infection, one of the major health issues of our time, is included as well as an entire unit on special neurologic conditions. Pain as the most common patient complaint and an important nursing concern is thoroughly discussed in its own chapter. Exemplary chapters on legal and ethical issues and psychosocial concerns complete the far-reaching scope of this collective effort to include the important issues facing the neuroscience nurse. Because each disorder is followed through the acute, nonacute, and rehabilitative/home care stages, this book will no doubt become an invaluable tool for the ongoing care of the neurologic patient from admission to rehabilitation. Finally, the concluding chapter of this text provides the neuroscience nurse with a glimpse into the future. "Neuroscience Nursing in the Year 2000" is a guide to what a neuroscience unit may look like in the coming century. Changes in health care may create a very different patient population, different diagnostic and monitoring techniques, and innovative new treatments. This unique chapter is a wonderful end to the book.

I have been a neuroscience nurse for 25 years and feel that I have grown up with the speciality. This text is a fine collection of the very latest information on the care of neuroscience patients, and I feel certain it will prove to be an unparalleled resource for all neuroscience nurses. Thank you, Ellen, for this wonderful contribution to our field.

Conne A. Walleck

Preface



The “Decade of the Brain” is the ideal time to introduce a new textbook in neuroscience nursing. Today’s health care crisis may, on the surface, appear as the “worst of times.” On closer examination, however, it can be viewed as the “best of times” as the reader of this book examines the challenging role of today’s neuroscience nurses and their impact on patient care. In 1989 the President signed House Joint Resolution 174 proclaiming the 1990s as the Decade of the Brain. For the first time the devastation of neurologic diseases and the need for further scientific endeavors in the field of neuroscience were publicly acknowledged.

This book was inspired by a desire to offer nurses a holistic view of neuroscience nursing. It is intended as a comprehensive resource for students as well as for advanced practitioners. It provides guidelines for practice and includes a telephone directory for health care resources, listings of supportive agencies and organizations, extensive bibliographies to encourage additional study, and even a blueprint for the future. **Key words** are bolded and defined within the text for greater clarity and understanding.

The 26 contributing authors who have shared their knowledge and expertise provide a powerful backdrop to this moment in history when the spotlight shines, for the first time, on the neuroscience specialty. The special combination of these leading authors from across the country offers the reader a variety of perspectives based on state-of-the-art clinical practice. In addition, three consultants have contributed special sections throughout the book on **Nutrition**, **Rehabilitation**, and **Care of the Elderly**.

The book’s format is divided into five units. Unit I and the **Neuroanatomy** chapter give the reader an essential foundation for understanding the anatomic basis of neurologic disorders. Without this vital background, the

practitioner cannot effectively correlate patient behavior and symptoms. Because the nursing process begins with data collection and assessment, **Assessment** and **Neurodiagnostic** chapters complete Unit I and prepare the neuroscience nurse for the first step of the nursing process.

Unit II contains 19 chapters describing **Neurologic Disorders** of the brain and nervous system that neuroscience nurses are likely to encounter in their practice. A common format is used that includes **Etiology**, **Pathophysiology**, and **Assessment** sections specific to each disorder. The **Treatment** section provides an overview of patient care, divided into **Medical**, **Surgical**, and **Nursing Management**.

Throughout the text, the words “interdisciplinary” or “health care team” are used to emphasize the complex treatment of the neurologic patient and the need for a team approach. Collaborative care can be quickly identified by the nurse with a review of the **Medical** and **Surgical Management** sections. Recognizing potential collaborative patient problems is vital for the neuroscience nurse.

The remaining components of the nursing process are located throughout the **Nursing Management** section, which is further divided, when appropriate, by patient acuity into **Acute Care**, (Intensive Care Unit), **Postacute Care** (Step-Down Unit), **Nonacute Care** (Neuroscience Nursing Unit), and **Rehabilitation or Home Care**.

The purpose of dividing nursing care is to distinguish the levels of care required by a patient. This allows quick reference for specific guidelines of patient care during a particular phase of the patient’s recovery and gives the reader a general concept of the course of care. This division of nursing care maps the patient’s path from admission to discharge and rehabilitation, as part of the designated **Pathways for Recovery**, defining the patient’s

progress and recovery. Because care plans are now widely distributed and, in fact, are often computerized, they have not been included generally.

It wasn't until graduate school, when I had the opportunity to follow individual patients through their hospital stay and their return home, that I gained a true appreciation of what the patient and family actually experience during a neurologic illness. I later developed a special course as a senior elective for baccalaureate nursing students, "Discovering Neuroscience Nursing," to give students a similar experience. I realized how individual nurses can become involved in the prescribed aspects of patient care in their unit and how difficult, if not impossible, it becomes to view the total impact of the disease on the patient and the family. With these lasting impressions in mind, the nursing management sections, while divided into separate levels of care, are designed to present the nurse's changing role throughout the patient's illness. The reader can study a neurologic disorder and identify predictive patient responses (nursing diagnoses) to better prepare for determining the patient's needs and planning nursing interventions. More importantly, this format offers nurses an overview of the patient's care prior to admission and into and after discharge from their unit. Only those responses considered **High-Risk Nursing Diagnoses** vs. routine are included to alert the nurse to the significant complications and their prevention.

Also included throughout the text are sections on **Patient/Family Teaching**. In this role, neuroscience nurses are urged to include preventive education, e.g., injury prevention and the promotion of healthy lifestyles, in an attempt to eliminate or decrease the incidence of traumatic injuries that constitutes a major part of our health care crisis.

Unit III reviews **Neurologic Conditions** as separate from neurologic disorders. Neuroscience nurses may frequently encounter patients with these conditions in their practice. Unfortunately, in the past nurses may not have fully appreciated the significance of these conditions and their relationship to a patient's neurologic disease. The importance of pain, for example, and nurses' lack of academic preparation to deal with patient

pain is discussed in **Pain and Headache**. An in-depth look at seizures and the poorly understood complaints of dizziness and vertigo are described separately in **Seizures** and **Dizziness and Vertigo**.

Unit IV, **General Considerations**, includes legal issues, care of the elderly, and the psychosocial concerns of the patient and family. These complex topics are of vital importance in today's practice. They are discussed in an understandable style to address neuroscience nurses' concerns. These chapters are also intended to offer a background for patient and family teaching. Today's litigious climate cannot be ignored and the "aging" of America places new demands on neuroscience nurses. Knowledge of these issues will prepare the nurse to deal effectively with future situations.

In no other nursing specialty are the psychosocial concerns so great as to almost rival the disease itself than in neuroscience nursing where disability and death are not uncommon. According to the National Advisory Neurological Disorders and Stroke Council, permanent neurological disability that restricts daily activities affects about 50 million Americans and costs the country a staggering \$400 billion each year. The neuroscience nurse plays a pivotal role in supporting the patient and the family during such an illness; therefore, an entire chapter is devoted to the importance of psychosocial nursing care.

Finally, Unit V, **Special Considerations**, deals with the advancement of neuroscience nursing that must keep pace with the rapid progress in the field of neuroscience and must provide opportunities for research and promote new nursing therapies for the prevention of disease, patient recovery, and the greater personal reward of the individual nurse. The final chapter holds the promise for the future. **Neuroscience Nursing in the Year 2000** dramatically describes the neuroscience nursing role envisioned as the Decade of the Brain ends and a new century begins. The role of neuroscience nurses will be even more vital to health care in the year 2000.

Ellen Barker

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Gina Chan, Developmental Editor, and her staff were instrumental in polishing the format and suggesting the final layout. Jeanne Allison, Associate Developmental Editor, saw that each chapter was carefully reviewed and returned to the editor with constructive suggestions for revisions, and Patricia McCandless provided photo research and editorial assistance. The reviewers' comments proved invaluable to the editor and authors for final revision.

Helen Hudlin, Senior Production Editor, made certain that each chapter was painstakingly edited and that every page was perfect.

Mark Swindle, with his strong background in neuroanatomy, illustrated every figure in detail to make difficult anatomical structures easy to understand. His illustrations speak for themselves. Jack Reuter also contributed many fine illustrations on short notice.

Joe Rothrock, medical photographer, with assistance from Lynne Martina, R.N., was responsible for the detailed photographs that appear in many of the chapters that enhance the reader's appreciation of equipment, procedures, and nursing care.

Without the extensive research and writing time contributed by each author, this comprehensive neuroscience nursing book would not have been possible. The combination of authors and their special expertise offers knowledge beyond that of any one writer.

The hours devoted by Michele Shauf in assisting the editor helped in each phase of the long process of editing 29 chapters. Finally, I gratefully acknowledge the contribution of Mosby publishers in recognizing the need for this new text in neuroscience nursing.

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