

SIXTH EDITION

Pathophysiology

Concepts of Altered Health States

Carol Mattson Porth

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Learning without thought is labor lost.

—CONFUCIUS

*This book is dedicated to the students, past and present,
for whom this book was written.*

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Preface

This edition marks the 20th anniversary of *Pathophysiology: Concepts of Altered Health States*. From its original edition of 650 pages, published in 1982, it has grown to over 1400 pages. The preparation of each new edition has been both challenging and humbling. Challenging to incorporate the myriad of new information; humbling to realize that despite advances in science and technology, illness and disease continue to occur and take their toll in terms of the physiologic as well as the social, psychological, and economic well-being of individuals, their families, the community, and the world at large. Nothing illustrates this realization as dramatically as the evolution of the worldwide AIDS epidemic for which science has yet to develop a vaccine or a cure.

As the others before it, the sixth edition has been carefully critiqued, reorganized, updated, and revised. The illustrations have grown from a modest 275 in the first edition to 675 in this edition. Seventy-five new illustrations have been added to this edition and another 75 have been significantly modified or replaced with new illustrations. This edition also sees the addition of three new chapters: "Concepts of Health and Disease," which introduces health and disease from a historical as well as the epidemiological viewpoint and serves as an introduction to concepts throughout the book; "Sleep and Sleep Disorders," which focuses on the physiology and developmental aspects of sleep disorders (a problem that is becoming more prevalent in a society that is increasingly faced with sleep-disturbing stresses such as those associated with long-term illnesses, family responsibilities, job schedules, and intercontinental travel); and the "Neurobiology of Thought and Mood Disorders," which focuses on anxiety and psychiatric disorders.

As a nurse-physiologist, my major emphasis with each revision has been to relate normal body functioning to the physiologic changes that participate in disease production and occur as a result of disease, as well as the body's remarkable ability to compensate for these changes. The beauty of physiology is that it integrates all of the aspects of the individual cells and organs of the human body into a total functional whole that can be used to explain both the physical and psychological aspects of altered health. Indeed, it has been my philosophy to share the beauty of the human body and to emphasize that in disease as in health, there is more "going right" in the body than is "going wrong." This book is an extension of my career and, as such, of my philosophy. It is my hope that readers will learn to appreciate the marvelous potential of the body,

incorporating it into their own philosophy and ultimately sharing it with their clients.

As with previous editions, every attempt has been made to develop a text that is current, accurate, and presented in a logical manner. The content has been arranged so that concepts build on one another. Words are defined as content is presented. Concepts from physiology, biochemistry, physics, and other sciences are reviewed as deemed appropriate. A conceptual model that integrates the developmental and preventive aspects of health has been used. Selection of content was based on common health problems, including the special needs of children and elderly persons. Although intended as a course textbook, it is also designed to serve as a reference book that students can take with them and use in their practice once the course is finished. The book was written with undergraduate students in mind, but is also appropriate for graduate students in nurse practitioner and clinical nurse specialist programs and for students in other health care disciplines.

The integration of full color into the design and illustrations has continued. This offers not only visual appeal, but enhances conceptual learning, linking text content to illustration content. This edition also retains the list of suffixes and prefixes, the table of normal laboratory values, and the glossary that was in the fifth edition. Objectives continue to appear at the beginning of each major section in a chapter and summary statements appear at the end. Two new features of the book are the key concept boxes and the inclusion of Internet addresses at the end of many of the chapters. The key concept boxes help the reader retain and utilize text information by providing a mechanism to incorporate text information into a larger conceptual unit as opposed to rotely memorizing a string of related and unrelated facts. The Internet addresses are intended not only to help the reader keep pace with the times, but to broaden the reader's perspective in terms of a more global approach to learning and practice. The Internet sites also encourage readers to investigate areas of individual interest and update knowledge in world of ever-changing information.

The writing of this book has been a meaningful endeavor for the authors. It was accomplished through an extensive review of the literature and through the use of critiques provided by students, faculty, and content specialists. As this vast amount of information was processed, inaccuracies or omissions may have occurred. Readers are encouraged to contact us about such errors. Such feedback is essential to the continual development of the book.



Acknowledgments

First and foremost, I would like to acknowledge James J. Smith, M.D., Ph.D. (1914–2001), former Chairman of the Physiology Department, Medical College of Wisconsin, who was my mentor during doctoral studies and supportive colleague and friend throughout our association. Dr. Smith's view of physiology was one of an integrated science with fundamental applications for all health professions. His steady guidance and encouragement served as an inspiration throughout the writing of the various editions of this book.

As in past editions, many persons participated in the creation of this work. The contributing authors deserve a special mention, for they worked long hours to supply essential content. To put a book of this magnitude together without their help would have been impossible. Although Marion Broome, Susan Dietz, Susan Gallagher-Lepak, Camille Kolotylo, Sylvia Eichner McDonald, Marianne Sigda, Stephanie Stewart, and Nancie Urban were not able to contribute to the sixth edition, their previous participation as contributing authors greatly facilitated its preparation. I would also like to acknowledge Mary Pat Kunert's efforts in making this edition a reality. She served as a consultant for the project and assisted in rewriting some of the pivotal chapters in the book.

Several other persons deserve special recognition. Georgianne Heymann, R.N., B.S.N., assisted in editing the manuscript. As with previous editions, she provided not only excellent editorial assistance, but also encouragement and support when the tasks associated with manuscript preparation

became most frustrating. Beth Peterman and Ann Curley deserve mention for their determination and dedication while pursuing their library research tasks.

It is often said that a picture is worth a thousand words. This is particularly true in a book such as this, where illustrations form the basis for understanding difficult concepts. I would like to acknowledge Jennifer Smith for her tireless efforts in preparing the new and modified illustrations for this edition. Carole Hilmer also deserves mention. She prepared the illustrations for previous editions of the book, many of which continue to be used. I would also like to acknowledge the contributions of other authors who have shared their illustrations and photos.

I would also like to recognize the efforts of the editorial and production staff at Lippincott Williams & Wilkins that were directed by Lisa Stead, Acquisitions Editor. I particularly want to thank Barclay Cunningham, who served as Managing Editor, and Debra Schiff for her work as Production Editor.

Past and present students in my classes also deserve a special salute, for they are the inspiration upon which this book is founded. They have provided the questions, suggestions, and contact with the "real world" of patient care that have directed the organization and selection of content for the book.

And last, but not least, I would like to acknowledge my family, my friends, and my colleagues for their patience, their understanding, and their encouragement through the entire process.

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