

EPILEPSY
A Comprehensive Textbook
Second Edition

EPILEPSY

A Comprehensive Textbook

SECOND EDITION

VOLUME I

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 **Wolters Kluwer | Lippincott Williams & Wilkins**
Health
Philadelphia • Baltimore • New York • London
Buenos Aires • Hong Kong • Sydney • Tokyo

Acquisitions Editor: Frances DeStefano
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Developmental Editor: Dovetail Content Solutions, Keith Donnellan
Production Editor: Bridgett Dougherty
Manufacturing Manager: Benjamin Rivera
Design Coordinator: Stephen Druding
Compositor: Aptara, Inc.

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A WOLTERS KLUWER BUSINESS
530 Walnut Street
Philadelphia, PA 19106 USA
LWW.com

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Printed in the USA

Library of Congress Cataloging-in-Publication Data

Epilepsy : a comprehensive textbook / editors, Jerome Engel Jr., Timothy A. Pedley ; associate editors, Jean Aicardi ... [et al.]. — 2nd ed.

p. ; cm.

Includes bibliographical references and index.

ISBN-13: 978-0-7817-5777-5 (alk. paper)

ISBN-10: 0-7817-5777-0 (alk. paper)

1. Epilepsy. I. Engel, Jerome. II. Pedley, Timothy A.

[DNLM: 1. Epilepsy. WL 385 E6025 2008]

RC372.E657 2008

616.8'53—dc22

2007032096

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WE DEDICATE THIS EDITION TO OUR WIVES,
CATHERINE AND BARBARA, AND THE OTHERS IN
OUR FAMILIES WHO ALL TOO OFTEN LOST US TO
THESE VOLUMES. ABOVE ALL, THIS BOOK IS FOR
PERSONS WITH EPILEPSY AND THEIR FAMILIES,
WHO DAILY GIVE MEANING TO OUR WORK.

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PREFACE TO THE FIRST EDITION

Epilepsy is the most common primary disorder of the brain, and, according to the World Health Organization, second only to depression as the leading cause of neuropsychiatric disability worldwide. The causes and manifestations of epilepsy are so diverse and multifaceted that it impinges on virtually every aspect of modern biomedical science, from molecular biology to vocational rehabilitation. The pathophysiological mechanisms of epilepsy encompass all aspects of basic neuroscience, and every health care professional can expect to become involved in the diagnosis or treatment of epilepsy or its consequences. For this reason, a great number of excellent books have been written on various aspects of epilepsy, some of them intended as general references for nonspecialists and others as sources of detailed information on specific topics for specialists. However, there is no single comprehensive textbook for the international community of practicing physicians and other professionals to whom persons with epilepsy are most likely to be referred. These volumes, therefore, are intended primarily for neurologists, psychiatrists, and pediatricians, who bear the major burden of diagnosis and treatment of epilepsy, although we hope that they will also be a useful reference for all who concern themselves with human illness, whether they themselves are specialists in some aspect of epileptology or are only occasionally likely to encounter a patient who suffers from epileptic seizures.

This textbook has been in preparation for over five years. The ambitious intent to create a truly comprehensive and definitive work required the collaboration of a large number of associate editors and section editors with both an overlapping expertise covering the entire field of epileptology and a perspective that was international rather than regional or parochial. The editors held several meetings with the associate and section editors to plan the organization of each of the three volumes, as well as to identify, and later recruit, leaders in each field to write the individual chapters. In most cases, two or more authors representing different points of view were selected in order for each chapter to be as authoritative as possible. These early

organizational efforts, which were necessary to avoid inadvertent omissions on the one hand and unnecessary redundancy on the other, were made possible, in large part, by generous educational grants from a number of pharmaceutical companies.

The three volumes of this textbook contain 12 major topic areas, beginning with factors that contribute to the occurrence of epilepsy, basic mechanisms, phenomenology of epileptic seizures, and diagnosis in Volume I; treatment, clinical biology, and psychiatric and social issues in Volume II; and descriptions of specific epileptic disorders, conditions that mimic epilepsy, and socioeconomic considerations in Volume III. The authors of the 289 chapters are major contributors of original papers for each of their topics and, therefore, have an intimate knowledge of the latest developments, often citing papers and books that were still in press at the time their chapters were being typeset.

The extent to which this textbook has achieved the original goals of being both comprehensive and definitive will be determined by how well it meets the needs of those who use it. We recognize that in a project as large as this, with the inevitable unforeseen mishaps that seemed to expand exponentially with the number of authors involved, the end result is bound to be less than perfect. The concept of this textbook, however, is that it should be seen as a work in progress, where we can learn by our mistakes so that subsequent editions, anticipated at fairly frequent intervals, can more closely approximate the ideal initially envisioned. In addition, there will be a CD-ROM version that can be updated regularly and ultimately linked with original research publications and more specialized texts. We welcome suggestions and constructive criticism, which will be of great importance to us in crafting later versions of this work.

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PREFACE TO THE SECOND EDITION

A decade has intervened between the first and second editions of *Epilepsy: A Comprehensive Textbook*. The process of revision afforded a unique opportunity to observe the extraordinary advances in research and the great improvements in clinical care that have occurred during this time. New insights into the basic mechanisms of seizures and epilepsy can be attributed largely to the increased application of cellular and molecular biology to the study of epileptic phenomena. In addition, there have been more direct investigations of patients using the tools of genetics and various brain imaging techniques. All aspects of treatment have improved, and both seizure control and quality of life for people with epilepsy are better today than ever before.

This progress is symbolized by noting that the second edition contains 20 more chapters than the first, of which 42 are completely new and 251 have been extensively rewritten. There were 351 contributors in the first edition; there are 444 in the second, of whom 225 are returning authors and 219 are new. As a result, although the book's outline follows that of the first edition, this is essentially an entirely new textbook.

As with the first edition, our objective with the second is to create a comprehensive textbook that addresses all aspects of epilepsy, from basic pathophysiology at cellular, molecular and organ levels to clinical phenomenology, diagnostic evaluation, treatment options, comorbidities, psychosocial rehabilitation and health care delivery. All chapters are written by distinguished experts in each field, and most have two or more authors representing different points of view to provide an authoritative consensus on each topic. Selection of editors and authors was designed to assure a perspective that is truly international. Therapeutic recommendations are evidence-based to the extent that is currently possible.

With completion of the second edition, we are acutely aware how much we owe to the section editors and, especially, our as-

sociate editors, all of whom are themselves internationally recognized experts in epilepsy. Without their help, chapters would not have been as consistently rigorous, balanced or current.

We also note with sadness the passing of colleagues who participated in the first edition, many of whom also contributed, or were scheduled to contribute, to the second. They include John Fred Annegers, Frank Benson, Fritz E. Dreifuss, John R. Gates, Richard W. Homan, Peter Kellaway, Pierre Loiseau, Eric Lothman, K. S. Mani, Frank Morrell, Claudio Munari, J. Kiffen Penry, Luis Felipe Quesney, A. James Rowan, Masakazu Seino, Arthur Sonnen and Sheila J. Wallace. We miss them, but they live on through their work and accomplishments, and the fond memories we have of them.

The first edition of *Epilepsy: A Comprehensive Textbook* was intended to be a work in progress, a basis for developing a comprehensive reference resource in a format that had the potential to be updated regularly. A CD-ROM was subsequently prepared that included additional materials and revisions of some chapters. The second edition will have a digital version that is Internet based for inclusion of additional figures and images, more color illustrations, and other enhancements, as well as advanced search capabilities. The Internet version of the textbook affords an opportunity for all authors to update their chapters on an ongoing basis, to ensure that the electronic version remains current with the very latest information.

As always, we welcome suggestions and constructive criticism from readers. This input will not only assist in improving future hard copy editions but also help us to provide an Internet-based digital version that is as useful as possible.

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ACKNOWLEDGMENTS

Once again, we gratefully acknowledge the vital contributions of the associate and section editors, whose work and effort were instrumental in producing this second edition. We also thank our chapter authors, who tolerated constant badgering, criticisms (we hope helpful), and many editorial changes, all with good humor. A textbook of this size cannot be created without the committed efforts of a large number of individuals, including Keith Donnellan, our Development Editor at Dove-tail Content Solutions, who worked with authors, kept track of submissions and the many revisions, and greatly assisted in

keeping everything organized; the staff at Lippincott Williams & Wilkins, especially Leanne McMillan, our Managing editor and Chris Miller from Aptara who provided excellent service at the key points; and our own office staff, especially Malinda Walford and Grissel Coplin in New York, and Dale Booth and Sabrina Hubbard in Los Angeles, who daily - for nearly two years - bore the brunt of our overly ambitious goals.

Jerome Engel Jr., MD, PhD
Timothy A. Pedley, MD

