

# EPILEPSY

## *A Comprehensive Textbook*

### Second Edition



# EPILEPSY

## *A Comprehensive Textbook*

S E C O N D E D I T I O N

### VOLUME I

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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.



CONTENTS OVERVIEW

VOLUME I		
I.	<b>Epidemiology, Pathology, and Genetics of Epilepsy</b> <i>Section Editors: Marc A. Dichter, W. Allen Hauser, Harry V. Vinters, and Timothy A. Pedley</i>	09
II.	<b>The Neurobiology of Epilepsy</b> <i>Section Editors: Marc A. Dichter, Uwe Heinemann, Robert L. Macdonald, Istvan Mody, Solomon L. Moshé, Philip A. Schwartzkroin, and Jerome Engel, Jr.</i>	217
III.	<b>Phenomenology</b> <i>Section Editors: Warren T. Blume, Olivier Dulac, Solomon L. Moshé, Shlomo Shinnar, Peter D. Williamson, Peter Wolf, and Jerome Engel, Jr.</i>	509
IV.	<b>Diagnostic Evaluation</b> <i>Section Editors: Jean Aicardi, Ruben I. Kuzniecky, John T. Langfitt, Solomon L. Moshé, and Timothy A. Pedley</i>	783
VOLUME II		
V.	<b>General Treatment Considerations</b> <i>Section Editors: Elinor Ben-Menachem, David W. Chadwick, Solomon L. Moshé, John M. Pellock, Emilio Perucca, and Timothy A. Pedley</i>	1117
VI.	<b>Antiepileptic Drugs</b> <i>Section Editors: Blaise F. D. Bourgeois, David W. Chadwick, Marc A. Dichter, Jacqueline A. French, Robert L. Macdonald, Brian S. Meldrum, Emilio Perucca, and Timothy A. Pedley</i>	1431
VII.	<b>Surgical Therapy</b> <i>Section Editors: Emilio Perucca, Dennis D. Spencer, Heinz Gregor Wieser, and Jerome Engel, Jr.</i>	1747
VIII.	<b>Clinical Biology of Epilepsy</b> <i>Section Editors: Michael J. Aminoff, Marc A. Dichter, Emilio Perucca, and Timothy A. Pedley</i>	1959
VOLUME III		
IX.	<b>Psychiatric and Social Issues</b> <i>Section Editors: Joan K. Austin, Robert T. Fraser, Andres M. Kanner, Michael R. Trimble, and Jerome Engel, Jr.</i>	2075
X.	<b>Epilepsy Syndromes</b> <i>Section Editors: Jean Aicardi, Warren T. Blume, Olivier Dulac, Natalio Fejerman, Masakazu Seino, Peter Wolf, and Jerome Engel, Jr.</i>	2283
XI.	<b>Disorders That Can Be Confused with Epilepsy</b> <i>Section Editors: Jean Aicardi, Frédérick Andermann, Michael R. Trimble, Timothy A. Pedley, and Jerome Engel, Jr.</i>	2695
XII.	<b>Delivery of Health Care and Socioeconomic Issues</b> <i>Section Editors: Robert J. Gumnit, Josemir W. Sander, Michael R. Trimble, Jerome Engel, Jr., and Timothy A. Pedley</i>	2845





CONTENTS

VOLUME I

- 1 Introduction: What Is Epilepsy? 1  
*Jerome Engel, Jr. and Timothy A. Pedley*

SECTION I ■ EPIDEMIOLOGY,  
PATHOLOGY, AND GENETICS  
OF EPILEPSY

*Section Editors: Marc A. Dichter, W. Allen Hauser,  
Harry V. Vinters, and Timothy A. Pedley*

- 2 Overview: Epidemiology, Pathology, and Genetics 9  
*W. Allen Hauser*
- 3 Epilepsy: Historical Perspectives 13  
*Michael D. Daras, Peter F. Bladin, Mervyn J. Eadie,  
and David Millett*

- 4 Sociocultural Perspectives 41  
*Leon Eisenberg*

EPIDEMIOLOGY

- 5 Incidence and Prevalence 45  
*Poonam Nina Banerjee and W. Allen Hauser*
- 6 Risk Factors 57  
*Dale C. Hesdorffer*
- 7 The Natural History and Prognosis of Epilepsy 65  
*Ettore Beghi and Josemir W. Sander*
- 8 Epidemiology of Acute Symptomatic Seizures 71  
*W. Allen Hauser*
- 9 Seizure Precipitants 77  
*Pierre Jallon and Benjamin G. Zifkin*
- 10 Mortality 81  
*Samden D. Lhatoo, Josemir W. Sander, and  
Törbjorn Tomson*
- 11 Epidemiology in Developing Countries 89  
*Nadir E. Bharucha, Arturo Carpio, and  
Amadou Gallo Diop*

NEUROPATHOLOGY

- 12 General Neuropathology of Epilepsy 103  
*Michael A. Farrell, Ingmar Blümcke, Negar Khanlou,  
and Harry V. Vinters*
- 13 Hippocampal Sclerosis 121  
*Gary W. Mathern, Charles L. Wilson, and Heinz Beck*

- 14 Neuropathology of Developmental Disorders Associated With Epilepsy 137  
*Harry V. Vinters, Noriko Salamon, Hajime Miyata,  
Negar Khanlou, and Gary W. Mathern*

GENETICS

- 15 Genetic Epidemiology 161  
*Ruth Ottman and Melodie R. Winawer*
- 16 EEG Traits 171  
*Timothy A. Pedley*
- 17 Genetic Diseases Associated with Epilepsy 183  
*Joshua L. Bonkowsky, Martha A. Nance,  
W. Allen Hauser, and V. Elving Anderson*
- 18 Genetics of Epilepsy Syndromes 195  
*Ortrud K. Steinlein*
- 19 Genetic Counseling 211  
*Frances Elmslie*

SECTION II ■ THE NEUROBIOLOGY  
OF EPILEPSY

*Section Editors: Marc A. Dichter, Uwe Heinemann,  
Robert L. Macdonald, Istvan Mody, Solomon L.  
Moshé, Philip A. Schwartzkroin, and Jerome Engel, Jr.*

- 20 Overview: The Neurobiology of Epilepsy 217  
*Marc A. Dichter*

MECHANISMS OF NORMAL  
NEURONAL EXCITABILITY

- 21 Control of Neuronal Excitability 219  
*Uwe Heinemann, Istvan Mody, and Yoel Yaari*
- 22 Excitatory Synaptic Transmission 233  
*Karen S. Wilcox, Peter J. West, and Marc A. Dichter*
- 23 GABA<sub>A</sub> and GABA<sub>B</sub> Receptor-Mediated Inhibitory Synaptic Transmission 245  
*Robert L. Macdonald and Istvan Mody*
- 24 Voltage-Gated Ion Channels: Molecular Biology and Role of Mutations in Epilepsy 253  
*Dimitri M. Kullmann and Stephanie Schorge*
- 25 Inflammation 267  
*Annamaria Vezzani, Jukka Peltola, and Damir Janigro*
- 26 Astroglial Mechanisms in Epilepsy 277  
*Christian Steinhäuser, Philip G. Haydon, and  
Nihal C. De Lanerolle*
- 27 Neuromodulation of Seizures, Epileptogenesis, and Epilepsy 289  
*Helen E. Scharfman and Robert Schwarcz*

28	Gene Expression Underlying Changes in Network Excitability 307
	<i>Katarzyna Lukasiuk, Raymond Dingledine, Daniel H. Lowenstein, and Asla Pitkänen</i>
29	Neocortical Anatomy and Physiology 323
	<i>Kristen A. Richardson, Erika E. Fanselow, and Barry W. Connors</i>
30	Limbic Anatomy and Physiology 337
	<i>Dan C. McIntyre and Philip A. Schwartzkroin</i>
31	Thalamocortical Anatomy and Physiology 353
	<i>Hal Blumenfeld and Douglas A. Coulter</i>
32	Basal Ganglia and Brainstem Anatomy and Physiology 367
	<i>Karen Gale, Mark Proctor, Jana Velišková, and Astrid Nehlig</i>
33	Development of Cortical Excitability 385
	<i>Peter B. Crino</i>
34	Early Events in the Development of the Cerebral Cortex 393
	<i>Volney L. Sheen and Christopher A. Walsh</i>
35	Synaptic Plasticity 403
	<i>Christophe Bernard</i>

MECHANISMS OF EPILEPTOGENESIS AND EPILEPTOGENICITY

36	Animal Models of Acquired Epilepsies and Status Epilepticus 415
	<i>Giuliano G. Avanzini, David M. Treiman, and Jerome Engel, Jr.</i>
37	Genetic Models of Epilepsy 445
	<i>Jeffrey L. Noebels</i>
38	Epilepsy In Vitro: Electrophysiology and Computer Modeling 457
	<i>John G. R. Jefferys</i>
39	Seizure Mechanisms and Vulnerability in the Developing Brain 469
	<i>John W. Swann, Tallie Z. Baram, Frances E. Jensen, and Solomon L. Moshé</i>
40	The Effect of Seizures on the Brain 481
	<i>Jack M. Parent, Douglas A. Coulter, and Edward H. Bertram</i>
41	Basic Mechanisms of Human Epilepsy 495
	<i>Jerome Engel, Jr., Marc A. Dichter, and Philip A. Schwartzkroin</i>

SECTION III ■ PHENOMENOLOGY

Section Editors: Warren T. Blume, Olivier Dulac, Solomon L. Moshé, Shlomo Shinnar, Peter D. Williamson, Peter Wolf, and Jerome Engel, Jr

42	Overview: Phenomenology 509
	<i>Warren T. Blume</i>

EPILEPTIC SEIZURES

43	Classification of Epileptic Seizures 511
	<i>Jerome Engel, Jr., Peter D. Williamson, Anne T. Berg, and Peter Wolf</i>
44	Simple Motor Seizures 521
	<i>Prakash Kotagal and Hans O. Lüders</i>
45	Neocortical Sensory Seizures 529
	<i>Paul C. Van Ness, Ronald P. Lesser, and Michael S. Duchowny</i>
46	Limbic Seizures 541
	<i>Jerome Engel, Jr. and Peter D. Williamson</i>
47	Generalized Tonic–Clonic Seizures 553
	<i>Benjamin G. Zifkin and Charlotte Dravet</i>
48	Generalized Clonic and Hemiclonic Seizures 563
	<i>Charlotte Dravet and Masakazu Seino</i>
49	Typical and Atypical Absence Seizures, Myoclonic Absences, and Eyelid Myoclonia 573
	<i>Hermann Stefan, O. Carter Snead III, and Orvar Eeg-Olofsson</i>
50	Generalized Myoclonic Seizures and Negative Myoclonus 585
	<i>Yushi Inoue, Kiyohito Terada, Olivier Dulac, Guido Rubboli, and Carlo Alberto Tassinari</i>
51	Atonic and Myoclonic–Atonic Seizures 601
	<i>Carlo Alberto Tassinari, Roberto Michelucci, Hideo Shigematsu, and Masakazu Seino</i>
52	Generalized Tonic Seizures 611
	<i>Lucia Fusco, Nicola Specchio, Kazuichi Yagi, Masakazu Seino, and Federico Vigeveno</i>
53	Gelastic Seizures 619
	<i>Jeremy L. Freeman and Orvar Eeg-Olofsson</i>
54	Epileptic Spasms 625
	<i>Gregory L. Holmes, Olivier Dulac, and Federico Vigeveno</i>
55	Seizure Semiology in Infants with Localization-Related Epilepsy 635
	<i>Douglas R. Nordli Jr. and Elaine Wyllie</i>
56	Neonatal Seizures 639
	<i>Eli M. Mizrahi, Perrine Plouin, and Robert R. Clancy</i>
57	Febrile Seizures 659
	<i>Carol S. Camfield, Peter R. Camfield, and Brian G. Neville</i>

STATUS EPILEPTICUS

58	Generalized Convulsive Status Epilepticus 665
	<i>David M. Treiman</i>
59	Complex Partial Status Epilepticus 677
	<i>Peter D. Williamson</i>
60	Absence Status Epilepticus 693
	<i>Pierre Thomas and O. Carter Snead III</i>
61	Simple Partial Status Epilepticus and Epilepsia Partialis Continua of Kozhevnikov 705
	<i>Heinz Gregor Wieser and Patrick Chauvel</i>

62    **Myoclonic Status Epilepticus** 725  
      *Shunsuke Ohtahara and Yoko Ohtsuka*

63    **Febrile Status Epilepticus** 731  
      *Darrell V. Lewis and Shlomo Shinnar*

64    **Acute Physiologic Changes, Morbidity, and Mortality of Status Epilepticus** 737  
      *Simon D. Shorvon, John M. Pellock, and Robert J. DeLorenzo*

65    **Long-Term Sequelae of Status Epilepticus** 751  
      *Shlomo Shinnar, Thomas L. Babb, Solomon L. Moshé, and Claude G. Wasterlain*

**EPILEPTIC DISORDERS**

66    **Introduction to the Epilepsies** 761  
      *Anne T. Berg*

67    **Classification of the Epilepsies** 767  
      *Jerome Engel Jr., Natalio Fejerman, Anne T. Berg, and Peter Wolf*

68    **Differential Diagnosis** 773  
      *Lawrence J. Hirsch, Frederick Andermann, and Timothy A. Pedley*

**SECTION IV ■ DIAGNOSTIC EVALUATION**

*Section Editors: Jean Aicardi, Ruben I. Kuzniecky, John T. Langfitt, Solomon L. Moshé, and Timothy A. Pedley*

69    **Overview: Diagnostic Evaluation** 783  
      *Solomon L. Moshé and Timothy A. Pedley*

**ROUTINE INVESTIGATIONS**

70    **History and Physical Examination** 785  
      *Jean Aicardi and David C. Taylor*

71    **Laboratory Tests** 791  
      *Ilo E. Leppik*

**EEG**

72    **Physiologic Basis of the Electroencephalogram and Local Field Potentials** 797  
      *György Buzsáki and Roger D. Traub*

73    **Interictal Electroencephalography** 809  
      *Thaddeus S. Walczak, Prasanna Jayakar, and Eli M. Mizrahi*

74    **Ictal Electroencephalogram** 825  
      *Michael R. Sperling and Robert R. Clancy*

75    **Electroencephalography in the Intensive Care Unit** 855  
      *Thomas P. Bleck, Lawrence J. Hirsch, and Paul M. Vespa*

76    **Electroencephalogram Mapping and Dynamic Analysis** 863  
      *Peter K. H. Wong and Fernando H. Lopes da Silva*

77    **Polygraphic Recordings** 873  
      *Carlo Alberto Tassinari and Guido Rubboli*

78    **Electroencephalographic and Magnetoencephalographic Source Modeling** 895  
      *John S. Ebersole, Hermann Stefan, and Christoph Baumgartner*

**NEUROIMAGING**

79    **Structural Neuroimaging** 917  
      *Graeme D. Jackson and Ruben I. Kuzniecky*

80    **Positron Emission Tomography** 945  
      *Thomas R. Henry and Harry T. Chugani*

81    **Single Photon Emission Computed Tomography** 965  
      *Noojan J. Kazemi, Terence J. O’Brien, Gregory D. Cascino, and Elson L. So*

82    **Magnetic Resonance Spectroscopy** 975  
      *Ognen A. C. Petroff and John S. Duncan*

83    **Functional Magnetic Resonance Imaging** 989  
      *Mark S. Cohen and Susan Y. Bookheimer*

84    **Computational Anatomy** 999  
      *Jack J. Lin and John C. Mazziotta*

**NEW DIRECTIONS**

85    **Seizure Prediction** 1011  
      *Klaus Lehnertz, Michel Le Van Quyen, and Brian Litt*

86    **Optical Imaging of Seizure Activity** 1025  
      *Michael M. Haglund, Daryl Hochman, and Arthur W. Toga*

87    **Microdialysis** 1031  
      *Idil Cavus and Charles L. Wilson*

88    **Transcranial Magnetic Stimulation** 1041  
      *Charles M. Epstein, Roberto Michelucci, and Mark Hallett*

89    **Cellular Imaging of Epilepsy** 1051  
      *Andrew J. Trevelyan and Rafael M. Yuste*

**NEUROPSYCHOLOGICAL EVALUATION**

90    **Neuropsychology Evaluation—Adults** 1057  
      *David W. Loring, William Barr, Marla Hamberger, and Christoph Helmstaedter*

91    **Neuropsychological Evaluation—Children** 1067  
      *Peter M. Rankin and Faraneh Vargha-Khadem*

**LONG-TERM MONITORING**

92    **Options for Long-Term Monitoring** 1077  
      *Alan D. Legatt and John S. Ebersole*

93    **The Epilepsy Monitoring Unit** 1085  
      *Gregory K. Bergey and Douglas R. Nordli Jr.*

94    **Drug Withdrawal and Other Activating Techniques** 1091  
      *Elson L. So and Bruce J. Fisch*

95    **Computer-Assisted Data Collection and Analysis** 1099  
      *Pierre LeVan and Jean Gotman*

VOLUME II

SECTION V ■ GENERAL  
TREATMENT CONSIDERATIONS

*Section Editors: Elinor Ben-Menachem,  
David W. Chadwick, Solomon Moshé, John Pellock,  
Emilio Perucca, and Timothy A. Pedley*

- 96 **Overview: General Approaches to  
Treatment 1117**  
*David W. Chadwick, Roger J. Porter,  
Emilio Perucca, and John M. Pellock*

GENERAL CONSIDERATIONS

- 97 **Indications for Treatment 1119**  
*John M. Freeman and Timothy A. Pedley*
- 98 **Goals of Therapy 1125**  
*Lawrence J. Hirsch and Timothy A. Pedley*
- 99 **Broader Aspects of Treatment 1129**  
*David C. Taylor*
- 100 **Quantitative Measures of Assessment 1133**  
*Gus A. Baker, Orrin Devinsky, Joanne Taylor, and  
Joyce A. Cramer*
- 101 **Age-Related Considerations 1141**  
*Ann Jacoby and Gus A. Baker*

PRINCIPLES OF DRUG TREATMENT

- 102 **Pharmacokinetics 1151**  
*Emilio Perucca*
- 103 **Therapeutic Drug Monitoring 1171**  
*Svein I. Johannessen, Philip N. Patsalos,  
Torbjörn Tomson, and Emilio Perucca*
- 104 **Efficacy of Antiepileptic Drugs 1185**  
*W. Edwin Dodson and Martin J. Brodie*
- 105 **Dose-Related Side Effects 1193**  
*Dieter Schmidt and Steven C. Schachter*
- 106 **Idiosyncratic Adverse Reactions 1201**  
*Munir Pirmohamed and Santiago Arroyo*
- 107 **Long-term Adverse Events 1209**  
*Alison M. Pack and Barry E. Gidal*
- 108 **General Principles: Teratogenicity of Antiepileptic  
Drugs 1213**  
*Mark S. Yerby, Dina Battino, and Georgia D.  
Montouris*
- 109 **Neurodevelopmental Effects 1225**  
*Eija Gaily and Kimford J. Meador*
- 110 **Drug–Drug Interactions 1235**  
*René H. Levy, Blaise F. D. Bourgeois,  
and Houda Hachad*
- 111 **Drug Treatment in Children 1249**  
*John M. Pellock, Douglas R. Nordli Jr.,  
and Olivier Dulac*
- 112 **Drug Treatment in Adolescents 1259**  
*Eileen P. G. Vining*
- 113 **Gender Issues for Drug Treatment 1263**  
*Anne Sabers and Cynthia L. Harden*

- 114 **Drug Treatment in the Elderly 1269**  
*Ilo E. Leppik and Angela K. Birnbaum*

- 115 **Mechanisms of Drug Resistance 1279**  
*Sanjay M. Sisodiya, Heinz Beck, Wolfgang Löscher,  
and Annamaria Vezzani*

- 116 **Compliance 1291**  
*Joyce A. Cramer*

STRATEGIES FOR  
PHARMACOTHERAPY

- 117 **Choice of Antiepileptic Drugs 1295**  
*Elinor Ben-Menachem and Jacqueline A. French*
- 118 **Starting and Stopping Treatment 1301**  
*Olivier Dulac, Ilo E. Leppik, David W. Chadwick,  
and Luigi Specchio*
- 119 **Routine Monitoring for Safety and Tolerability During  
Chronic Treatment with Antiepileptic Drugs 1311**  
*John M. Pellock, L. James Willmore,  
and Michael D. Privitera*
- 120 **Rapid Substitution of Antiepileptic Drugs 1317**  
*Blaise F. D. Bourgeois*
- 121 **Adjunctive and Combination Therapy 1321**  
*Blaise F. D. Bourgeois and Frank Gilliam*

SPECIAL THERAPEUTIC  
CONSIDERATIONS

- 122 **Treatment of Single and Infrequent Seizures 1327**  
*Ettore Beghi, Anne T. Berg, Shlomo Shinnar,  
and W. Allen Hauser*
- 123 **Treatment of Neonatal Seizures 1335**  
*Eli M. Mizrahi and Mark S. Scher*
- 124 **Treatment of Febrile Seizures 1345**  
*Peter R. Camfield, Carol S. Camfield,  
and Kai J. Eriksson*
- 125 **Treatment of Provoked Seizures 1351**  
*Braxton B. Wannamaker and Harold E. Booker*
- 126 **Treatment of Status Epilepticus 1357**  
*Brian K. Alldredge, David M. Treiman,  
Thomas P. Bleck, and Simon D. Shorvon*
- 127 **Drug-resistant Epilepsy 1365**  
*Warren T. Blume*
- 128 **Prophylactic Treatment 1371**  
*L. James Willmore*

ALTERNATIVE APPROACHES

- 129 **Ketogenic Diet 1377**  
*Carl E. Stafstrom, Eileen P. G. Vining,  
and Jong M. Rho*
- 130 **Sex-Hormone Treatment 1387**  
*Andrew G. Herzog*
- 131 **Vagus Nerve Stimulation 1395**  
*Steven C. Schachter and Paul Boon*



132	<b>Behavioral Therapies</b>	1401
	<i>Peter Wolf</i>	
133	<b>Complementary and Alternative Medical Therapies</b>	1407
	<i>Steven C. Schachter, Carlos Acevedo, Keryma A. Acevedo, Chi-Wan Lai, and Amadou G. Diop</i>	
134	<b>New Therapeutic Directions</b>	1415
	<i>Robert S. Fisher, Guy M. McKhann, II, John M. Stern, Mark S. Quigg, Jean Régis, Donald L. Schomer, Steven C. Schachter, and Annamaria Vezzani</i>	

SECTION VI ■ ANTIEPILEPTIC DRUGS

*Section Editors: Blaise F. D. Bourgeois, David W. Chadwick, Marc A. Dichter, Jacqueline A. French, Robert L. Macdonald, Brian S. Meldrum, Emilio Perucca, and Timothy A. Pedley*

135	<b>Overview: Antiepileptic Drugs</b>	1431
	<i>Jacqueline A. French and Elinor Ben-Menachem</i>	
136	<b>Cellular Effects of Antiepileptic Drugs</b>	1433
	<i>Robert L. Macdonald and Michael A. Rogawski</i>	

ANTIEPILEPTIC DRUG DEVELOPMENT

137	<b>Basic Principles of Medicinal Chemistry</b>	1447
	<i>Donald F. Weaver and Raman Sankar</i>	
138	<b>Molecular Targets for Novel Antiepileptic Drugs</b>	1457
	<i>Brian S. Meldrum</i>	
139	<b>Screening of New Compounds and the Role of the Pharmaceutical Industry</b>	1469
	<i>H. Steve White, Roger J. Porter, and Harvey J. Kupferberg</i>	
140	<b>Clinical Trials of Antiepileptic Drugs in Adults and Children</b>	1487
	<i>Jacqueline A. French, Tracy A. Glauser, and Bernd Schmidt</i>	
141	<b>Pharmacogenetics and Pharmacogenomics</b>	1497
	<i>Nicole Walley, Sanjay M. Sisodiya, and David B. Goldstein</i>	
142	<b>The Role of the Food and Drug Administration</b>	1507
	<i>Russell Katz</i>	
143	<b>The Role of European Regulatory Agencies</b>	1511
	<i>Michel Baulac and Eric Abadie</i>	

ANTIEPILEPTIC DRUGS

144	<b>Adrenocorticotropic Hormone and Steroids</b>	1519
	<i>Richard A. Hrachovy and James D. Frost, Jr.</i>	
145	<b>Benzodiazepines</b>	1531
	<i>Dieter Schmidt and Alan J. Wilensky</i>	

146	<b>Carbamazepine</b>	1543
	<i>Evan J. Fertig and Richard H. Mattson</i>	
147	<b>Ethosuximide</b>	1557
	<i>Edward B. Bromfield</i>	
148	<b>Felbamate</b>	1561
	<i>William H. Theodore</i>	
149	<b>Gabapentin</b>	1569
	<i>David W. Chadwick and Thomas R. Browne</i>	
150	<b>Lamotrigine</b>	1575
	<i>Torbjörn Tomson, Linda J. Stephen, and Martin J. Brodie</i>	
151	<b>Levetiracetam</b>	1583
	<i>Michael D. Privitera and Jennifer Cavitt</i>	
152	<b>Oxcarbazepine</b>	1593
	<i>Ahmad A. Beydoun, Wassim M. Nasreddine, and Fiorenzo Albini</i>	
153	<b>Phenobarbital and Other Barbiturates</b>	1599
	<i>Mervyn J. Eadie and Patrick Kwan</i>	
154	<b>Phenytoin, Fosphenytoin, and Other Hydantoins</b>	1609
	<i>John M. Stern, Emilio Perucca, and Thomas R. Browne</i>	
155	<b>Pregabalin</b>	1629
	<i>Gregory K. Bergey</i>	
156	<b>Primidone</b>	1639
	<i>Blaise F. D. Bourgeois</i>	
157	<b>Rufinamide</b>	1647
	<i>Tracy A. Glauser and Meir Bialer</i>	
158	<b>Tiagabine</b>	1655
	<i>Reetta Kälviäinen</i>	
159	<b>Topiramate</b>	1663
	<i>Edward Faught and Tracy A. Glauser</i>	
160	<b>Valproate</b>	1673
	<i>Ahmad A. Beydoun, Kevin Farrell, and Wassim M. Nasreddine</i>	
161	<b>Vigabatrin</b>	1683
	<i>Elinor Ben-Menachem, Olivier Dulac, and Catherine Chiron</i>	
162	<b>Zonisamide</b>	1695
	<i>Masakazu Seino and Ilo E. Leppik</i>	
163	<b>Trimethadione, Paraldehyde, Phenacemide, Bromides, Sulthiame, Acetazolamide, and Methsuximide</b>	1703
	<i>Thomas R. Browne, Barbara W. LeDuc, Maria D. Kostka-Rokosz, Edward B. Bromfield, R. Eugene Ramsay and John De Toledo</i>	
164	<b>Investigational Drugs</b>	1721
	<i>H. Steve White, Emilio Perucca, and Michael D. Privitera</i>	
165	<b>Immunoglobulin and Immunomodulatory Therapy</b>	1741
	<i>Flavio Villani, Christian G. Bien, and Giuliano G. Avanzini</i>	

SECTION VII ■ SURGICAL THERAPY

*Section Editors: Emilio Perucca, Dennis D. Spencer,  
Heinz Gregor Wieser, and Jerome Engel, Jr.*

- 166 **Overview: Surgical Therapy** 1747  
*Jerome Engel Jr., Heinz Gregor Wieser,  
and Dennis D. Spencer*

CANDIDATE SELECTION

- 167 **Indications and Criteria for Surgical Intervention** 1751  
*Michael S. Duchowny, A. Simon Harvey,  
Michael R. Sperling, and Peter D. Williamson*

- 168 **Surgically Remediable Syndromes** 1761  
*Jerome Engel, Jr., Gregory D. Cascino,  
and W. Donald Shields*

- 169 **Presurgical Evaluation: General Principles  
and Methods** 1771  
*Gary W. Mathern and Michael R. Sperling*

INVASIVE MONITORING TECHNIQUES

- 170 **Foramen Ovale and Peg Electrodes** 1779  
*Heinz Gregor Wieser*

- 171 **Intracranial Electrodes** 1791  
*Susan S. Spencer, Michael R. Sperling,  
D. Alan Shewmon, and Philippe Kahane*

- 172 **Intraoperative Electrocorticography** 1817  
*Mark D. Holmes and Gian-Emilio Chatrian*

FUNCTIONAL MAPPING TECHNIQUES

- 173 **Intraarterial Amobarbital Procedures** 1833  
*Marilyn Jones-Gotman, Mary Lou Smith,  
and Heinz Gregor Wieser*

- 174 **Intraoperative Functional Mapping** 1843  
*George A. Ojemann and Susan Y. Bookheimer*

- 175 **Extraoperative Functional Mapping** 1851  
*Prasanna Jayakar and Ronald P. Lesser*

THERAPEUTIC SURGICAL  
PROCEDURES

- 176 **Anterior Temporal Resection** 1859  
*Kenneth Vives, Gabriel Lee, Werner Doyle,  
and Dennis D. Spencer*

- 177 **Neocortical Resections** 1869  
*Youssef G. Comair, Paul C. Van Ness, Roukoz B.  
Chamoun, and Carmel H. Bouclaous*

- 178 **Multilobar Resections and Hemispherectomy** 1879  
*Devin K. Binder and Johannes Schramm*

- 179 **Lesionectomy: Management of Substrate-directed  
Epilepsies** 1891  
*Kurupath Radhakrishnan, Itzhak Fried,  
and Gregory D. Cascino*

- 180 **Corpus Callosotomy** 1907  
*David W. Roberts*

- 181 **Reoperation for Medically Refractory Epilepsy** 1915  
*Robert R. Goodman*

- 182 **Multiple Subpial Transections and Other  
Interventions** 1921  
*Charles E. Polkey and Michael C. Smith*

POSTOPERATIVE FOLLOW-UP

- 183 **Outcome Measures** 1929  
*Anne T. Berg, John T. Langfitt, Barbara G. Vickrey,  
and Samuel Wiebe*

- 184 **Pre-Postoperative Rehabilitation** 1939  
*Robert T. Fraser and Rupprecht Thorbecke*

- 185 **Special Considerations for Pediatric Epilepsy  
Surgery** 1949  
*Michael S. Duchowny, J. Helen Cross, and  
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SECTION VIII ■ CLINICAL BIOLOGY  
OF EPILEPSY

*Section Editors: Michael J. Aminoff, Marc A. Dichter,  
Emilio Perucca, and Timothy A. Pedley*

- 186 **Overview: Clinical Biology of Epilepsy** 1957  
*Timothy A. Pedley*

BIORHYTHMS AND THE AUTONOMIC  
NERVOUS SYSTEM

- 187 **Chronobiology** 1961  
*Margaret N. Shouse and Mark S. Quigg*

- 188 **Sleep** 1975  
*Margaret N. Shouse, Carl W. Bazil,  
and Beth A. Malow*

- 189 **Sudden Death in Epilepsy** 1991  
*Lina Nashef and Torbjörn Tomson*

- 190 **Autonomic Disturbances** 1999  
*Jeffrey H. Goodman, Mark Stewart, and  
Frank W. Drislane*

COMORBIDITY

- 191 **Comorbidity in Adults** 2007  
*Michael J. Aminoff and Jack M. Parent*

- 192 **Comorbidity and Immunizations in Children** 2021  
*Trevor J. Resnick and Michael S. Duchowny*

- 193 **Procedures and Anesthesia in Patients with  
Epilepsy** 2027  
*Orrin Devinsky and Douglas R. Nordli, Jr.*

NEUROENDOCRINOLOGY

- 194 **Hormone Changes in Epilepsy** 2037  
*Cynthia L. Harden and Cheryl A. Frye*

- 195 **Effects of Hormones on Seizure Expression** 2043  
*Torbjörn Bäckström*

- 196 **Disorders of Reproduction and Fertility** 2053  
*Andrew G. Herzog*

- 197

Sexuality in Epilepsy 2061

Martha J. Morrell
- 198

Pregnancy and the Mother with Epilepsy 2067

Mark S. Yerby

VOLUME III

SECTION IX ■ PSYCHIATRIC AND SOCIAL ISSUES

Section Editors: Joan K. Austin, Robert T. Fraser, Andres M. Kanner, Michael R. Trimble, and Jerome Engel, Jr.

PSYCHIATRIC ISSUES

- 199

Overview: Psychiatric Issues 2075

Michael R. Trimble
- 200

Neurobiology of Behavioral Disorders 2077

Jerome Engel, Jr., David C. Taylor, and Michael R. Trimble
- 201

Cognitive Side Effects of Antiepileptic Drugs 2085

Albert P. Aldenkamp, Joanne Taylor, and Gus A. Baker
- 202

Learning Disorders 2093

Michael P. Kerr and Mary Lou Smith
- 203

Personality Disorders in Epilepsy 2105

Orrin Devinsky, Charles Vorkas, William B. Barr, and Bruce P. Hermann
- 204

Schizophrenia and Other Psychoses 2113

Michael R. Trimble and Bettina Schmitz
- 205

Affective Disorders 2123

Andres M. Kanner and Dietrich Blumer
- 206

Anxiety Disorders 2139

Andres M. Kanner and Alan B. Ettinger
- 207

Nonepileptic Psychogenic Seizures and Epilepsy 2155

W. Curt LaFrance, Jr., Andres M. Kanner, and Tim Betts
- 208

Psychiatric Side Effects of Antiepileptic Drugs 2163

Bettina Schmitz
- 209

Psychiatry and Surgical Treatment 2169

Steffi C. Koch-Stoecker and Kousuke Kanemoto
- 210

Psychiatric Disorders in Children 2179

Rochelle Caplan, Christopher Gillberg, David W. Dunn, and Sarah J. Spence
- 211

Suicide: Incidence, Psychopathology, Pathogenesis, and Prevention 2195

Dietrich Blumer
- 212

Disorders of Impulse Control 2203

Ludger Tebartz van Elst and Michael R. Trimble
- 213

Psychiatry and Residential Care 2209

Stephen W. Brown and Frank M. C. Besag
- 214

Psychopharmacology of Patients with Behavior Disorders and Epilepsy 2215

Michael R. Trimble and Marco Mula

SOCIAL ISSUES

- 215

Overview: Social Issues 2225

Robert T. Fraser

- 216

Social Aspects: Epilepsy Stigma and Quality of Life 2229

Ann Jacoby, Dee Snape, and Gus A. Baker
- 217

Disruptions in Social Functioning and Services Facilitating Adjustment for the Child and the Adult 2237

Joan K. Austin, Hanneke M. de Boer, and Patricia O. Shafer
- 218

Maximizing School Functioning and the School-to-work Transition 2247

Michael Seidenberg and David C. Clemmons
- 219

The Range of Needs and Services in Vocational Rehabilitation 2253

Rupprecht Thorbecke and Robert T. Fraser
- 220

Issues in Health Outcomes Assessment 2267

Zarya A. Rubin and Samuel Wiebe
- 221

Legal Concerns and Effective Advocacy Strategies 2277

Roy G. Beran, John A. Devereux, William McLin, Cynthia Lehman, Johan Falk-Pedersen, Hanneke M. de Boer, and Alexandra Finucane

SECTION X ■ EPILEPSY SYNDROMES

Section Editors: Jean Aicardi, Warren T. Blume, Olivier Dulac, Natalio Fejerman, Masakazu Seino, Peter Wolf, and Jerome Engel, Jr.

NEONATAL SYNDROMES

- 222

Overview: Neonatal Syndromes 2283

Jean Aicardi
- 223

Benign Familial Neonatal Seizures and Benign Idiopathic Neonatal Seizures 2287

Perrine Plouin
- 224

Early Myoclonic Encephalopathy (Neonatal Myoclonic Encephalopathy) 2297

Aleksandra Djukic, Federico Vigevano, Perrine Plouin, and Solomon L. Moshé
- 225

Ohtahara Syndrome 2303

Shunsuke Ohtahara, Yasuko Yamatogi, and Yoko Ohtsuka

SYNDROMES OF INFANCY AND EARLY CHILDHOOD

- 226

Overview: Syndromes of Infancy and Early Childhood 2309

Jean Aicardi
- 227

Benign Familial and Nonfamilial Seizures 2313

Federico Vigevano, Nicola Specchio, Roberto Caraballo, and Kazuyoshi Watanabe
- 228

Migrating Partial Seizures In Infancy 2323

Maria Roberta Cilio, Olivier Dulac, Renzo Guerrini, and Federico Vigevano
- 229

West Syndrome 2329

Olivier Dulac, Bernardo Dalla Bernardina, and Catherine Chiron

230

Severe Myoclonic Epilepsy in Infancy (Dravet Syndrome) 2337

Charlotte Dravet and Michelle Bureau

231

Idiopathic Myoclonic Epilepsy in Infancy 2343

Charlotte Dravet and Federico Vigevano

232

Epilepsy with Myoclonic Astatic Seizures 2349

Olivier Dulac and Anna Kaminska

233

Hemiconvulsion-Hemiplegia-Epilepsy Syndrome 2355

Alexis Arzimanoglou, Charlotte Dravet, and Patrick Chauvel

234

Myoclonic Status in Nonprogressive Encephalopathy 2361

Bernardo Dalla Bernardina

SYNDROMES OF LATER CHILDHOOD AND ADOLESCENCE

235

Overview: Syndromes of Late Childhood and Adolescence 2365

Jean Aicardi

236

Benign Childhood Epilepsy with Centrotemporal Spikes 2369

Natalio Fejerman

237

Early-onset Benign Childhood Occipital Epilepsy (Panayiotopoulos Type) 2379

Natalio Fejerman

238

Late-onset Childhood Occipital Epilepsy (Gastaut Type) 2387

Giuseppe Gobbi, Renzo Guerrini, and Salvatore Grosso

239

Childhood and Juvenile Absence Epilepsies 2397

Edouard Hirsch, Pierre Thomas, and Chrysostomos P. Panayiotopoulos

240

Epilepsy with Myoclonic Absences 2413

Carlo Alberto Tassinari, Roberto Michelucci, Elena Gardella, and Guido Rubboli

241

Lennox-Gastaut Syndrome 2417

Pierre Genton and Charlotte Dravet

242

Landau-Kleffner Syndrome and CSWS 2429

Michael C. Smith and Charles E. Polkey

243

Rasmussen’s Encephalitis (Chronic Focal Encephalitis) 2439

François Dubeau, Frédérick Andermann, Heinz Wiendl, and Amit Bar-Or

244

Juvenile Myoclonic Epilepsy 2455

Eliane Kobayashi, Benjamin G. Zifkin, Frédérick Andermann, and Eva Andermann

NON AGE-RELATED AND SPECIAL SYNDROMES

245

Overview: Non–Age-Related, and Special Syndromes 2461

Warren T. Blume and Peter Wolf

246

Anatomic Classification of Focal Epilepsies 2465

Peter D. Williamson and Jerome Engel, Jr.

247

Mesial Temporal Lobe Epilepsy with Hippocampal Sclerosis 2479

Jerome Engel, Jr., Peter D. Williamson, and Heinz Gregor Wieser

248

Familial Temporal Lobe Epilepsies 2487

Fernando Cendes, Eliane Kobayashi, Iscia Lopes-Cendes, Frédérick Andermann, and Eva Andermann

249

Familial Frontal Lobe Epilepsies 2495

Fabienne Picard and Eylert Brodtkorb

250

Hypothalamic Hamartoma with Gelastic Seizures 2503

A. Simon Harvey, Orvar Eeg-Olofsson, and Jeremy L. Freeman

251

Localization-related Epilepsies Due to Specific Lesions 2511

Noojan J. Kazemi, Terence J. O’Brien, and Gregory D. Cascino

252

Progressive Myoclonus Epilepsies 2525

Samuel F. Berkovic

253

Posttraumatic Seizures 2537

Frederick G. Langendorf, Timothy A. Pedley, and Nancy R. Temkin

254

Isolated Seizures 2543

Peter Wolf

255

Familial Partial (Focal) Epilepsy with Variable Foci 2549

Eliane Kobayashi, Frédérick Andermann, and Eva Andermann

256

Generalized (Genetic) Epilepsy with Febrile Seizures Plus 2553

Ingrid E. Scheffer and Samuel F. Berkovic

257

Reflex Seizures 2559

Benjamin G. Zifkin, Renzo Guerrini, and Perrine Plouin

DISEASES ASSOCIATED WITH EPILEPSY

258

Overview: Diseases Associated with Epilepsy 2573

Timothy A. Pedley

259

Malformations of Cortical Development 2575

Ruben I. Kuzniecky and Graeme D. Jackson

260

Chromosomal Abnormalities 2589

Renzo Guerrini, Agatino Battaglia, Romeo Carrozzo, Giuseppe Gobbi, Elena Parrini, Tiziano Pramparo, and Orsatta Zuffardi

261

Inherited Metabolic Disorders 2603

Douglas R. Nordli Jr. and Darryl C. De Vivo

262

Mitochondrial Diseases 2621

Michio Hirano, Wolfram S. Kunz, and Salvatore DiMauro

263

Cerebral Palsy 2631

John B. P. Stephenson



- 264

Neoplastic Diseases 2637

Lawrence D. Recht and Michael Glantz
- 265

Infection and Inflammatory Diseases 2643

Oscar H. Del Brutto
- 266

Connective Tissue Diseases 2653

Barbara S. Koppel
- 267

Electrolyte, Sporadic Metabolic, and Endocrine Disorders 2661

Giuseppe Gobbi, Salvatore Grosso, Gianna Bertani, and Antonella Pini
- 268

Alcohol and Drug Abuse 2683

John C. M. Brust
- 269

Disorders of Pregnancy 2689

Martha J. Morrell and Maurice L. Druzin

SECTION XI ■ DISORDERS THAT CAN BE CONFUSED WITH EPILEPSY

Section Editors: Jean Aicardi, Frédérick Andermann, Michael R. Trimble, Timothy A. Pedley, and Jerome Engel, Jr.

- 270

Overview: Disorders That Can Be Confused with Epilepsy 2695

Frédérick Andermann

SYSTEMIC DISTURBANCES

- 271

Syncope 2699

Mark S. Quigg and Thomas P. Bleck
- 272

Metabolic and Endocrine Disorders Resembling Seizures 2713

Peter W. Kaplan and Shehzad Basaria
- 273

Systemic Nonepileptic Paroxysmal Disorders From Neonatal to Childhood Periods 2723

Mark S. Scher and Federico Vigevaro

NEUROLOGICAL DISTURBANCES

- 274

Migraine 2733

Stephen D. Silberstein, Richard B. Lipton, and Sheryl Haut
- 275

Cerebrovascular Disorders 2745

Clinton B. Wright, Joan T. Moroney, and Ralph L. Sacco
- 276

Sleep Disorders 2757

Mark W. Mahowald and Carlos H. Schenck
- 277

Myoclonus and Myoclonic Syndromes 2765

Mark Hallett and Hiroshi Shibasaki
- 278

Movement Disorders 2771

Stanley Fahn and Steven J. Frucht
- 279

Sensory Disorders 2779

Carl W. Bazil

- 280

Nonepileptic Neurologic Paroxysmal Disorders and Episodic Symptoms in Infants 2783

Natalio Fejerman

PSYCHIATRIC DISTURBANCES

- 281

Overview: Psychiatric Disturbances 2793

Michael R. Trimble
- 282

Psychogenic Non-Epileptic Seizures 2795

Andres M. Kanner, W. Curt LaFrance, Jr., and Tim Betts
- 283

Episodic Dyscontrol 2811

Ludger Tebartz van Elst and Michael R. Trimble
- 284

Dissociative Disorders 2819

Richard J. Brown and Michael R. Trimble
- 285

Panic Disorder and Hyperventilation Syndrome 2829

Alan B. Ettinger, Jonathan M. Bird, and Andres M. Kanner
- 286

Obsessive-Compulsive Behavior 2837

Mark S. George and Marco Mula
- 287

Nonaffective Psychoses, Schizophrenia, and Schizophrenia-Like Psychoses 2841

Michael R. Trimble and Bettina Schmitz

SECTION XII ■ DELIVERY OF HEALTH CARE AND SOCIOECONOMIC ISSUES

Section Editors: Robert J. Gumnit, Josemir W. Sander, Michael R. Trimble, Jerome Engel, Jr., and Timothy A. Pedley

- 288

Overview: Delivery of Health Care and Socioeconomic Issues 2845

Robert J. Gumnit, Josemir W. Sander, and Simon D. Shorvon

ORGANIZATION OF HEALTH CARE IN DIFFERENT COUNTRIES

- 289

Brazil 2849

Carlos A. M. Guerreiro
- 290

Canada 2859

Samuel Wiebe
- 291

China 2865

Shichuo Li, Liwen Wu, Guoming Luan, Weiping Liao, Wenzhi Wang, Jianzhong Wu, and Liyun He
- 292

Germany 2879

Margarete Pfäfflin and Rupprecht Thorbecke
- 293

India 2885

Satish Jain and P. Satishchandra
- 294

Japan 2891

E. Ann Yeh and Masakazu Seino
- 295

Nigeria 2895

Bola Adamolekun

296 Saudi Arabia 2899  
*Sonia Khan and Abdul Aziz Al Semari*

297 Senegal 2909  
*Amadou Gallo Diop and  
Ibrahima Pierre Ndiaye*

298 United Kingdom 2915  
*Stephen W. Brown and Frank M. C. Besag*

299 United States 2921  
*Robert J. Gumnit*

300 Zambia 2923  
*Gretchen L. Birbeck and Ellie Kalichi*

301 Comparison of Different Systems and the Burden of  
Epilepsy 2929  
*Matilde Leonardi and Chong Tin Tan*

SPECIALIZED CENTERS FOR EPILEPSY

302 Comprehensive Epilepsy Programs—United States  
2937  
*Robert J. Gumnit*

303 Comprehensive Epilepsy Programs—  
Norway 2939  
*Svein I. Johannessen and Karl O. Nakken*

304 Comprehensive Epilepsy Programs—Japan 2943  
*Masakazu Seino and E. Ann Yeh*

305 Residential Epilepsy Centers—United Kingdom 2947  
*Frank M. C. Besag and Stephen W. Brown*

306 Comprehensive Epilepsy Centers—  
The Netherlands 2951  
*Harry Meinardi and Albert P. Aldenkamp*

COST AND ALLOCATION OF  
RESOURCES

307 Economic Aspects of Epilepsy and Antiepileptic  
Treatment 2959  
*Demetris K. Pillas, Caroline E. Selai, John T. Langfitt,  
and Marc R. Nuwer*

308 The Economic Impact of Epilepsy 2971  
*Christoph Pachlatko, Dan Chisholm, Harry Meinardi,  
and Josemir W. Sander*

309 Information Transfer and Education 2979  
*Patricia K. Crumrine and Simon D. Shorvon*

*Subject Index I-1*

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xx

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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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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.

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