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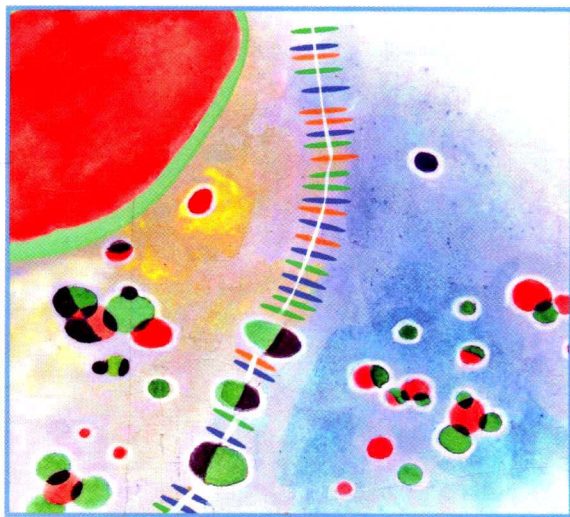
Handbook of Dialysis

Fifth Edition

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Peter G. Blake

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FIFTH EDITION

Handbook of Dialysis

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Buenos Aires • Hong Kong • Sydney • Tokyo

Acquisitions Editor: Julie Goolsby
Product Development Editor: Leanne Vandetty
Editorial Assistant: Brian Convery
Production Project Manager: Bridgett Dougherty
Design Coordinator: Holly Reid McLaughlin
Manufacturing Coordinator: Beth Welsh
Prepress Vendor: S4Carlisle Publishing Services

Fifth Edition

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9 8 7 6 5 4 3 2 1

Printed in the US

Not authorised for sale in United States, Canada, Australia, New Zealand, Puerto Rico, and U.S. Virgin Islands.

Library of Congress Cataloging-in-Publication Data

Handbook of dialysis / [edited by] John T. Daugirdas, Peter G. Blake, Todd S. Ing. — Fifth edition.

p. ; cm.

Includes bibliographical references and index.

ISBN 978-1-4511-4429-1 (paperback)

I. Daugirdas, John T., editor. II. Blake, Peter Gerard, 1956- , editor. III. Ing, Todd S., editor.

[DNLM: 1. Renal Dialysis—Handbooks. WJ 39]

RC901.7.H45

617.4'61059—dc23

2014029014

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Some drugs and medical devices presented in this publication have Food and Drug Administration (FDA) clearance for limited use in restricted research settings. It is the responsibility of the health care provider to ascertain the FDA status of each drug or device planned for use in his or her clinical practice.

FIFTH EDITION

Handbook of Dialysis

DCR 26/002

To Stanislovas Mačiulis, MD—a beloved
grandfather never met who continues
to guide and inspire.
(JTD)

To my wife Rose and to my sons, Matthew
and Andrew—the three most important
people in my life.
(PB)

To Oliver M. Wrong, MD, FRCP,
my exemplary mentor.
(TSI)

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PREFACE

We are very fortunate and honored to present this Fifth Edition of the *Handbook of Dialysis* to the nephrology community. It has been 7 years since the Fourth Edition; the long interval reflects the relatively slow, incremental nature of improvements that have occurred in dialysis therapy during that period. We continue with a strong international emphasis, referencing both KDOQI and KDIGO guidelines, and taking care to express laboratory measurements in both British Imperial and SI units.

The chapter on online hemodiafiltration, a therapy still not available in the United States, has been maintained and updated. A chapter on sorbent dialysis, present in the first two editions of the *Handbook*, but removed from the third and fourth editions as use of the REDY system dwindled, has been reinstated and modernized, given the anticipated imminent release of new sorbent-equipped machines for both in-center and home hemodialysis. The hemodialysis vascular access section, which grew from one to two chapters between the third and fourth editions, has now expanded to four chapters, testifying to the importance of vascular access to overall hemodialysis patient care. In the peritoneal dialysis section, the access chapter was completely rewritten by a general surgeon with long experience and dedication in this area. Another completely rewritten chapter describes the growing use of acute peritoneal dialysis and “urgent start” PD. For both peritoneal dialysis and hemodialysis adequacy, fewer equations are used and, instead, analogies help explain key concepts. More emphasis is placed on dialysis time, frequency, ultrafiltration rate, and other supplementary metrics of adequacy, including doing dialysis the “European way.” To make room for expanded and additional chapters, a number of topics that were discussed in great detail in their own separate chapters in the Fourth Edition have been downsized and folded into other chapters; our goal was to maintain a pocket-sized book that focuses on frequently encountered clinical problems. As in previous editions, we have tried to maintain the unique character of the *Handbook of Dialysis*, aiming for a resource that will be useful to both new and experienced nephrology care providers to help them in their difficult job of assuring the best treatment for our patients.

We would like to thank the many chapter authors who agreed to write for the *Handbook*. The time demands on clinical nephrologists and other care providers continue to increase, and we greatly appreciate the willingness of our chapter authors to allocate precious time to share their insights and expertise. We would also like to recognize Aleksandra Godlevska for her beautiful modern art-inspired cover design.

John T. Daugirdas

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Todd S. Ing

CONTENTS

Contributing Authors
Preface

vii
xiii

PART I: CHRONIC KIDNEY DISEASE MANAGEMENT	1
1 Approach to Patients with Chronic Kidney Disease, Stages 1–4	2
Ajay Singh	
2 Management of CKD Stages 4 and 5: Preparation for Transplantation, Dialysis, or Conservative Care	22
Ajay Singh and Jameela Kari	
PART II: BLOOD-BASED THERAPIES	33
3 Physiologic Principles and Urea Kinetic Modeling	34
John T. Daugirdas	
4 Hemodialysis Apparatus	66
Suhail Ahmad, Madhukar Misra, Nicholas Hoenich, and John T. Daugirdas	
5 Dialysis Water and Dialysate	89
Richard A. Ward and Todd S. Ing	
6 Arteriovenous Fistulas and Grafts: The Basics	99
Tushar J. Vachharajani, Steven Wu, Deborah Brouwer-Maier, and Arif Asif	
7 Venous Catheter Access: The Basics	121
Michael Allon and Arif Asif	
8 Arteriovenous Vascular Access Monitoring and Complications	137
Alexander Yevzlin, Anil K. Agarwal, Loay Salman, and Arif Asif	

9	Venous Catheter Infections and Other Complications	155
	Loay Salman, Arif Asif, and Michael Allon	
10	Acute Hemodialysis Prescription	172
	Edward A. Ross, Allen R. Nissenson, and John T. Daugirdas	
11	Chronic Hemodialysis Prescription	192
	John T. Daugirdas	
12	Complications during Hemodialysis	215
	Richard A. Sherman, John T. Daugirdas, and Todd S. Ing	
13	Dialyzer Reuse	237
	Peter B. DeOreo	
14	Anticoagulation	252
	Andrew Davenport, Kar Neng Lai, Joachim Hertel, and Ralph J. Caruana	
15	Continuous Renal Replacement Therapies	268
	Boon Wee Teo, Jennifer S. Messer, Horng Ruey Chua, Priscilla How, and Sevag Demirjian	
16	Home and Intensive Hemodialysis	305
	Gihad E. Nesrallah, Rita S. Suri, Robert M. Lindsay, and Andreas Pierratos	
17	Hemodiafiltration	321
	Bernard Canaud, Sudhir Bowry, and Stefano Stuard	
18	Therapeutic Apheresis	333
	Dobri D. Kiprof, Amber Sanchez, and Charles Pusey	
19	The Relevance of Sorbent Technology Today	360
	Jose A. Diaz-Buxo, Stephen A. Merchant, David Updyke, and Susan E. Bentley	
20	Use of Dialysis and Hemoperfusion in the Treatment of Poisoning	368
	James F. Winchester, Nikolas B. Harbord, Elliot Charen, and Marc Ghannoum	
	PART III: PERITONEAL DIALYSIS	391
21	Physiology of Peritoneal Dialysis	392
	Peter G. Blake and John T. Daugirdas	
22	Apparatus for Peritoneal Dialysis	408
	Olof Heimbürger and Peter G. Blake	

23	Peritoneal Dialysis Catheters, Placement, and Care	425
	John H. Crabtree and Arsh Jain	
24	Peritoneal Dialysis for the Treatment of Acute Kidney Injury	451
	Daniela Ponce, André Luis Balbi, and Fredric O. Finkelstein	
25	Adequacy of Peritoneal Dialysis and Chronic Peritoneal Dialysis Prescription	464
	Peter G. Blake and John T. Daugirdas	
26	Volume Status and Fluid Overload in Peritoneal Dialysis	483
	Neil Boudville and Peter G. Blake	
27	Peritonitis and Exit-Site Infection	490
	Cheuk-Chun Szeto, Philip K.-T. Li, and David J. Leehey	
28	Hernias, Leaks, and Encapsulating Peritoneal Sclerosis	513
	Joanne M. Bargman	
29	Metabolic, Acid-Base, and Electrolyte Aspects of Peritoneal Dialysis	521
	Rajnish Mehrotra	
	PART IV: CLINICAL PROBLEM AREAS	527
30	Psychosocial Issues	528
	Scott D. Cohen, Daniel Cukor, and Paul L. Kimmel	
31	Nutrition	535
	Michael V. Rocco and T. Alp Ikizler	
32	Diabetes	555
	David J. Leehey, Mary Ann Emanuele, and Nicholas Emanuele	
33	Hypertension	578
	Carmine Zoccali and Francesca Mallamaci	
34	Hematologic Abnormalities	592
	Steven Fishbane and Hitesh H. Shah	
35	Infections	615
	David J. Leehey, Jacqueline T. Pham, Tran H. Tran, and Joseph R. Lentino	
36	Bone Disease	665
	Daniel W. Coyne, Derek S. Larson, and James A. Delmez	

37	Dialysis in Infants and Children	693
	Susan R. Mendley	
38	Cardiovascular Disease	713
	Daniel E. Weiner and Mark J. Sarnak	
39	Obstetrics and Gynecology in Dialysis Patients	736
	Susan Hou and Susan Grossman	
40	Nervous System and Sleep Disorders	754
	Christopher W. McIntyre	
	Appendix A: Tools for Estimating Glomerular Filtration Rate and Daily Creatinine Excretion	777
	Appendix B: Nutritional Tools	783
	Appendix C: Urea Kinetic Modeling	795
	Appendix D: Molecular Weights and Conversion Tables	799
	Index	803

PART I

CHRONIC KIDNEY DISEASE MANAGEMENT