

Contents

Sponsors	iii
Foreword	iv
Contents	v
Purposes, Learning Outcomes, Contact Hours	xii
Contributors	xx
Reviewers	xxv
Preface	xxviii
A Word About Style	xxx
Reference and Citation in APA Format	xxxix

VOLUME 1

PART 1 Foundations for Practice in Nephrology Nursing 1

Chapter 1 Professional Issues in Nephrology Nursing 3

Editor: Glenda M. Payne

Section A	Professional Issues	4
	<i>Glenda M. Payne</i>	
Section B	Ethics	7
	<i>Jo Ann A. Otts</i>	
Section C	Leadership and Management	13
	<i>Glenda M. Payne, Nancy B. Pierce, Lillian A. Pryor</i>	
Section D	Health Information Technology and the Electronic Health Record	40
	<i>Emel Hamilton</i>	
Section E	Collaboration with the ESRD Networks	43
	<i>Glenda M. Payne</i>	
Section F	The Economics of ESRD Reimbursement	44
	<i>Glenda M. Payne</i>	
Section G	Quality Assurance & Performance Improvement	46
	<i>Bonnie B. Greenspan</i>	
Section H	Culture of Safety	54
	<i>Bonnie B. Greenspan</i>	
Section I	Role of Regulatory Agencies	60
	<i>Glenda M. Payne</i>	

Chapter 2 Research and Evidence-Based Practice in Nephrology Nursing 71

Editor: Tamara M. Kear

Section A	Overview of Research and Evidence-Based Practice	72
	<i>Tamara M. Kear</i>	
Section B	Standards for Care	77
	<i>Norma Gomez</i>	
Section C	The National Kidney Foundation Disease Outcomes Quality Initiative and Kidney Disease: Improving Global Outcomes	80
	<i>Kim Schafer Astroth</i>	
Section D	The Dialysis Outcomes and Practice Patterns Study	83
	<i>Caroline S. Counts</i>	

Section E	United States Renal Data System	84
	<i>Brittany Koons</i>	
Section F	Consolidated Renal Operations in a Web-Enabled Network (CROWNWeb)	87
	<i>Laurie Amburn</i>	
Section G	United Network for Organ Sharing	88
	<i>Linda S. Wright</i>	

Chapter 3 Health Policy, Politics, and Influence in Nephrology Nursing 97

Editor: Donna Bednarski

Authors: Paul Bednarski, Donna Bednarski

Section A	Advocacy	98
Section B	Public Policy and the Political Process	99
Section C	How to Be Politically Active	107
Section D	Advocacy and ANNA	111

Chapter 4 Essentials of Disaster and Emergency Preparedness in Nephrology Nursing .. 115

Editor and Author: Melinda J. Martin-Lester

Section A	Introduction and Scope	116
Section B	Federal, State, and Local Requirements	118
Section C	Natural Disasters	126
Section D	Man-Made Disasters	140
Section E	Emergency Preparedness and Disaster Drills	145

PART 2 Physiologic and Psychosocial Basis for Nephrology Nursing Practice 151

Chapter 5 The Kidney in Health and Disease 153

Editor: Caroline S. Counts

Section A	Genetics and Genomics	154
	<i>Michelle M. Kelly</i>	
Section B	Anatomy and Physiology	174
	<i>Carol M. Headley</i>	
Section C	Pathophysiology	198
	<i>Paula Dutka, Faith Lynch</i>	
Section D	Assessment of Kidney Structure and Function	253
	<i>Faith Lynch, Naveed Masani</i>	

Chapter 6 Chronic Kidney Disease 287

Editor: Jami S. Brown

Authors: Jami S. Brown, Michelle Gilliland

Section A	Overview of CKD	288
Section B	Etiology, Pathophysiology, and Evaluation of CKD	295
Section C	Disease Evaluation and Management	304
Section D	Management of Complications	307
Section E	Management of Comorbidities	317
Section F	Promoting Optimal Health for Individuals with CKD	326
Section G	Empowering the Patient with CKD	340

Chapter 7 Individualizing the Care for Those with Kidney Disease 351

Editor: Donna Bednarski

Section A	Psychosocial Impact and Spirituality	352
	<i>Lisa Hall</i>	
Section B	Cultural Diversity	360
	<i>Molly Cahill, Cheryl L. Groenhoff</i>	

Section C	Patient and Family Engagement	373
	<i>Mary S. Haras</i>	
Section D	Patient and Family Education	377
	<i>Molly Cahill, Cheryl L. Groenhoff</i>	
Section E	Caring for Veterans in the Dialysis Setting	386
	<i>Elizabeth Dowers</i>	
Section F	The Financial Impact	390
	<i>Sandra Savery</i>	
Section G	Physical Rehabilitation	403
	<i>Daniel Diroll</i>	
Chapter 8	Foundations in Nutrition and Clinical Applications in Nephrology Nursing ...	417
	<i>Editor: Deborah Brommage</i>	
Section A	Nutrition Screening and Assessment	418
	<i>Deborah Brommage</i>	
Section B	Chronic Kidney Disease	423
	<i>Lesley McPhatter</i>	
Section C	Special Considerations in Kidney Disease	426
	<i>Deborah Brommage, Ann Beemer Cotton, Pamela S. Kent, Rachael R. Majorowicz, Otilia Perichart-Perera, María Angélica Reyes López, Sharon R. Schatz, Gail Torres</i>	
Section D	Nutrition Intervention	446
	<i>Louise Clement, Pamela S. Kent</i>	
Chapter 9	Foundations in Pharmacology and Clinical Applications in Nephrology Nursing	457
	<i>Editor: Elizabeth Wilpula</i>	
	<i>Authors: Elizabeth Wilpula, Francine D. Salinitri</i>	
Section A	Interactions Between Drugs and the Body	458
Section B	Effects of CKD on Drug Activity	463
Section C	Drugs Frequently Used to Treat Patients with CKD	465
Section D	Assessment of Kidney Function and Medication Dosing in Patients with CKD ...	492
Section E	The Clinical Significance for Nursing	497
<hr/>		
PART 3	The APRN's Approaches to Care in Nephrology	503
	<i>Part 3 Editor: Leah Foster Smith</i>	
Chapter 10	Professional Issues for the APRN in Nephrology	505
	<i>Mary Schira</i>	
Chapter 11	Overview of CKD for the APRN	517
	<i>Sally Campoy</i>	
Section A	Introduction to Chronic Kidney Disease	518
Section B	Making the Diagnosis	522
Section C	Managing Stages 1 to 5 CKD (Not on Dialysis)	528
Section D	CKD Education	555
Section E	Resources and Practice Issues	560
Chapter 12	Overview of Treatment Options and the Vascular Access for the APRN	567
Section A	Role of the APRN in the Care of the Kidney Transplant Recipient	568
	<i>Brenda B. Thrasher, Elizabeth Wilpula</i>	
Section B	Approaches to Care by the APRN in Hemodialysis	583
	<i>Carol L. Kinzner, Leah Foster Smith</i>	
Section C	Approaches to Care by the APRN in Hemodialysis Access	598
	<i>Donna Bednarski</i>	
Section D	Approaches to Care by the APRN in Peritoneal Dialysis and Home Dialysis	613
	<i>Catherine Wells</i>	

Chapter 13	Overview of Acute Care for the APRN	657
	<i>Kevin M. Lowe</i>	
Chapter 14	Overview of Pediatric Nephrology for the APRN	707
	<i>Helen Currier, Jessica Geer, Theresa A. Mottes</i>	
Section A	Prenatal and Postnatal Anatomic Development of the Kidneys	708
Section B	Prenatal Physiology and Pathophysiology	709
Section C	Postnatal Physiology and Pathophysiology Secondary to Abnormal Development of the Kidneys	709
Section D	Assessment of Kidney Function in Children	713
Section E	Kidney Disease in Children	715
Section F	Hypertension in Children	724
Section G	Treatment of Secondary Issues Related to CKD	726
Section H	Kidney Replacement Therapies in Children	735
Section I	Acute Kidney Injury	744
Section J	Special Considerations for Pediatric Programs	746
Section K	Role of the Nephrology Pediatric APRN	747
	Self-Assessment Questions for Chapters 1 to 14	xxxiii
	Abbreviations for Volumes 1 and 2 (green pages)	xxxix
	Index for Volumes 1 and 2	I-1

VOLUME 2

PART 4 Foundations in Infection Prevention, Control, and Clinical Applications in Nephrology Nursing 751

Part 4 Editor: Amber B. Paulus

Chapter 15	Infection Risks of Patients on Dialysis	753
Section A	Overview	754
	<i>Amber B. Paulus</i>	
Section B	Bacteremia	754
	<i>Lucia L. Finch</i>	
Section C	Vascular Access and Catheter-Related Infections	759
	<i>Lucia L. Finch</i>	
Section D	Antibiotic and Antimicrobial Resistance	761
	<i>Lucia L. Finch</i>	
Chapter 16	Specific Infectious Diseases	771
Section A	Hepatitis B	772
	<i>Naomi Carbone, Amber B. Paulus</i>	
Section B	Hepatitis C	779
	<i>Naomi Carbone, Amber B. Paulus</i>	
Section C	Hepatitis D	783
	<i>Naomi Carbone, Amber B. Paulus</i>	
Section D	Human Immunodeficiency Virus	784
	<i>Barbara Dommert-Breckler</i>	
Section E	The Ebola Virus	785
	<i>Barbara Dommert-Breckler</i>	
Section F	Tuberculosis	791
	<i>Barbara Dommert-Breckler</i>	
Section G	Herpes Zoster	799
	<i>Amber B. Paulus</i>	

Chapter 17	Environmental Risks Related to Infections in Hemodialysis Clinics	805
Section A	Aerosol Transmissible Diseases <i>Barbara Dommert-Breckler</i>	806
Section B	Occupational Exposure to BBP (HBV, HBC, HIV) <i>Naomi Carbone, Amber B. Paulus</i>	807
Section C	Infections Related to Water, Reuse, and/or Machine Contamination <i>Annabelle Perez</i>	809
Section D	Bed Bugs <i>Amber B. Paulus</i>	811
Chapter 18	Infection Prevention: Processes and Interventions	815
Section A	Hemodialysis Precautions <i>Annabelle Perez</i>	816
Section B	Safe Injection Practices and Medication Safety <i>Annabelle Perez</i>	818
Section C	Immunizations <i>Amber B. Paulus</i>	820
Chapter 19	Quality Management and Reporting for Infection Control in Dialysis	827
Section A	Regulations, Recommendations, Guidelines, and Quality Improvement <i>Amber B. Paulus</i>	828
Section B	National Healthcare Safety Network <i>Amber B. Paulus</i>	831

PART 5 Treatment Options for Patients with Chronic Kidney Failure and the Vascular Access **839**

Chapter 20	Advance Care Planning, Palliative Care, and End-of-Life Care	841
<i>Editor: Debra Hain</i>		
<i>Authors: Debra Castner, Debra Hain, Joy Hesselgrave</i>		
Section A	Introduction to Palliative and Hospice Care	842
Section B	Population-Specific Issues	855
Section C	The Domains of Palliative Care	859
Section D	Pain Management	860
Section E	Nephrology Nurses' Self-Care	867
Chapter 21	Transplantation	873
<i>Editors: Amy Woodard, Geraldine Zingraf</i>		
Section A	Kidney Transplantation <i>Jill M. Strejc, Amy Woodard, Geraldine Zingraf</i>	874
Section B	Immunobiology of Organ Transplant Rejection <i>Geraldine Zingraf</i>	913
Section C	Immunosuppressive Therapy <i>Elizabeth Wilpula</i>	917
Section D	Multiorgan Transplant <i>Amy Woodard, Geraldine Zingraf</i>	923
Section E	Care of the Kidney Transplant Recipient with a Co-Infection <i>Geraldine Zingraf</i>	941
Section F	Role of the CKD/Dialysis Nurse in the Care of the Transplant Candidate <i>Amy Woodard</i>	952

Chapter 22 Hemodialysis 961*Editor: Joan Arslanian*

Section A	Principles of Hemodialysis	964
	<i>Sheila Deziel, Joan Arslanian</i>	
Section B	Water Treatment	988
	<i>Glenda M. Payne</i>	
Section C	The Hemodialysis Treatment	1002
	<i>Joan Arslanian</i>	
Section D	Fluid Removal: Obtaining the Estimated Dry Weight	1020
	<i>Gail Dewald</i>	
Section E	Complications of Hemodialysis: Prevention and Management	1034
	<i>Elizabeth St. John</i>	
Section F	Dialyzing Patients with Special Needs	1046
	<i>Karen Burwell, Joan Arslanian</i>	
Section G	Dialyzer Reprocessing	1057
	<i>Vernon S. Taaffe</i>	

Chapter 23 Vascular Access for Hemodialysis 1069*Editor and Author: Lynda K. Ball*

Section A	Introduction	1070
Section B	Preparing for a Vascular Access for Hemodialysis	1070
Section C	The Arteriovenous Fistula (AVF)	1075
Section D	The Arteriovenous Graft (AVG)	1096
Section E	The Central Venous Catheter (CVC)	1105
Section F	The Vascular Access Center	1115
Section G	Monitoring, Surveillance, and Diagnostic Testing: Detection of Access Dysfunction	1116
Section H	CMS ESRD Interpretive Guidelines Pertaining to the Vascular Access	1117
Section I	Making Dialysis Safer for Patients Coalition	1123
Section J	New Clinical Practice Guidelines for Vascular Access	1123

Chapter 24 Peritoneal Dialysis 1127*Editor: Lucy Todd*

Section A	Peritoneal Dialysis Access	1128
	<i>Kim Lambertson</i>	
Section B	Peritoneal Dialysis Therapy	1138
	<i>Lucy Todd</i>	
Section C	Peritoneal Dialysis Complications	1166
	<i>Lisa M. Ales</i>	

Chapter 25 Home Dialysis 1187*Editor: Lisa Koester Wiedemann**Authors: Debbie Allen, Stacy Cigliana, Sylvia Donato-Moore, Lisa Koester Wiedemann*

Section A	Overview of Home Dialysis	1188
Section B	Home Hemodialysis	1197
Section C	Home Peritoneal Dialysis	1212

PART 6 Acute Kidney Injury 1223

Part 6 Editor: Alice Luehr

Chapter 26	Program Management in the Acute Care Setting	1225
	<i>Andrew Deppner</i>	
Chapter 27	Acute Kidney Injury	1249
	<i>Ann Beemer Cotton, Michele Inglese</i>	
Chapter 28	Hemodialysis in the Acute Care Setting	1285
	<i>Kristi L'Ecuyer</i>	
Chapter 29	Water Treatment in the Acute Care Setting	1351
	<i>Glenda M. Payne</i>	
Chapter 30	Peritoneal Dialysis in the Acute Care Setting	1363
	<i>Alice Luehr</i>	
Chapter 31	Heart Failure and Left Ventricular Assist Devices	1375
	<i>Carey Phelan</i>	
Chapter 32	Continuous Renal Replacement Therapies in the Acute Care Setting	1393
	<i>Alice Luehr, Maria Teresa Palleschi, Kate Wagner</i>	
Chapter 33	Therapeutic Apheresis	1419
	<i>Carey Phelan</i>	

PART 7 Kidney Disease in Patient Populations Across the Life Span 1439

Chapter 34 Care of the Neonate to Adolescent with Kidney Disease 1441

Editor: Cindy Richards

Authors: Amy Cameron, Charles D. Coe, Barbara Cometti, Vickie Kanute, Cindy Richards, Mary Ann Salazar, Deidra Schmidt, Suzan Stephens, Christina Taylor

Section A	Overview of Pediatric Patients with Chronic Kidney Disease	1442
Section B	Chronic Kidney Disease in Children	1453
Section C	Complications of Kidney Disease in Children	1466
Section D	Acute Kidney Injury	1491
Section E	Kidney Replacement Therapies	1494
Section F	Nutrition and Growth	1511
Section G	Pediatric Pharmacology	1514
Section H	Psychosocial Issues in Children	1521

Chapter 35 Care of the Older Adult with Kidney Disease 1529

Editor and Author: Debra Hain

Section A	Overview of the Older Adult	1530
Section B	Medication Management in Older Adults	1535
Section C	Kidney Injury or Disease in Older Adults	1538
Section D	Geriatric Syndromes	1540
Section E	Kidney Disease in Older Adults	1543
Section F	Additional Considerations	1545

Self-Assessment Questions for Chapters 15 to 35 xxxiii

Abbreviations for Volumes 1 and 2 (green pages) xli

Index for Volumes 1 and 2 I-1