DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

Consultancies: Titilola Afolabi (Wolters Kluwer); Danielle Lazear (Wolters Kluwer); David E. Procaccini (American Heart Association, Council on Clinical Cardiology Pharmacology Committee); Christopher A. Thomas (Wolters-Kluwer); Susan Villegas (National Association of Boards of Pharmacy); Regine White (American Society of Health-System Pharmacists)

Stock Ownership:

Royalties: David E. Procaccini (Silvergate Pharmaceuticals)

Grants: Christa Jefferis Kirk (AltaThera Parmaceuticals); Danielle Lazear (Cincinnati Children's Hospital, Center for Pediatric Genomics); Jessica Otero (AltaThera Pharmaceuticals); David E. Procaccini (Grifols Pharmaceutical Co.); Christopher A. Thomas (Phoenix Children's Hospital)

Honoraria: Jessica Otero (American Society of Health-System Pharmacists); David E. Procaccini (Pediatric Pharmacy Advocacy Group)

Other: Tara L. Smith (provides review services for ASHP board certification materials)

Nothing to disclose: Amanda Baker; Meghan Baldo; Brian K. Brown; Esther C. Chu; Jennifer Gilarde; Elizabeth Goswami; Richard J. Haftmann; Brent Hall; Jennifer Hewlett; Alyssa Hobby; Tim Humlicek; Amy Kiskaddon; Dominique G. Mark; Brady Moffett; Jennifer Pak; Eric R. Pfeifer; Julie Pingel; E. Zachary Ramsey; Michael Raschka; Gale L. Romanowski

ROLE OF BPS: The Board of Pharmacy Specialties (BPS) is an autonomous division of the American Pharmacists Association (APhA). To maintain its strict, independent standards for certification, BPS does NOT endorse or provide review information, preparatory courses, or study guides for Board Certification Examinations. The Board, through its specialty councils, is responsible for specialty examination content, administration, scoring, and all other aspects of its certification programs. BPS is totally separate and distinct from ACCP. PedSAP has been approved by BPS for use in BCPPS recertification. Information about the BPS recertification process is available <u>online</u>.

Questions regarding BCPPS recertification should be directed to:

Board of Pharmacy Specialties 2215 Constitution Avenue NW Washington, DC 20037 (202) 429-7591

Cardiology and Nephrology I Panel

Series Editors:

Marcia L. Buck, Pharm.D., FCCP, FPPA, BCPPS

Director, Clinical Practice Advancement American College of Clinical Pharmacy Washington, District of Columbia

Bernard R. Lee, Pharm.D., BCPS, BCPPS

Clinical Pharmacist Department of Pharmacy Mease Countryside Hospital BayCare Health System Safety Harbor, Florida

Kirsten H. Ohler, Pharm.D., BCPS, BCPPS

Clinical Associate Professor, Pharmacy Practice Program Director, PGY1 Pharmacy Residency Clinical Pharmacist, NICU/Pediatrics University of Illinois at Chicago College of Pharmacy University of Illinois Hospital & Health Sciences System Chicago, Illinois

Faculty Panel Chair:

David E. Procaccini, Pharm.D., MPH, BCPS, BCPPS, CACP

Clinical Pharmacy Practitioner, Pediatric Intensive Care & Cardiology/Heart Transplant Department of Pharmacy The Johns Hopkins Hospital Baltimore, Maryland

Congenital Heart Defects, Heart Surgeries, Low Cardiac Output Syndrome

Author

Gale L. Romanowski, Pharm.D., BCPPS

Neonatal Intensive Care Specialist, Residency Program Director, Education Coordinator Department of Pharmacy Rady Children's Hospital Assistant Clinical Professor Skaggs School of Pharmacy and Pharmaceutical Science University of California San Diego San Diego, California

Reviewers

E. Zachary Ramsey, Pharm.D., BCPPS

Lead Clinical Pharmacist, Residency Programs Director Department of Pharmacy Services Children's Hospital of Philadelphia Philadelphia, Pennsylvania

Brian K. Brown, Pharm.D., BCPS, BCPPS

CVICU/Cardiac Transplant Pharmacist Department of Pharmacy Johns Hopkins All Children's Hospital St. Petersburg, Florida

Pediatric Cardiomyopathies and Heart Failure Management

Author

Tim Humlicek, Pharm.D.

Clinical Pharmacy Specialist Texas Children's Hospital Houston, Texas

Reviewers

Christopher A. Thomas, Pharm.D., MBA, BCPPS

Manager of Clinical Pharmacy Services Department of Pharmacy Services Phoenix Children's Hospital Phoenix, Arizona

Michael J. Raschka, Pharm.D., BCPPS

Pediatric Clinical Pharmacist Pharmacy Department Children's Hospitals and Clinics of Minnesota Minneapolis, Minnesota

The American College of Clinical Pharmacy and the authors thank the following individuals for their careful review of the Cardiology and Nephrology I chapters:

Joseph M. LaRochelle, Pharm.D., FCCP, BCPPS

Coleman Endowed Professor of Pharmacy Practice and Vice Chair Division of Clinical and Administrative Sciences, Xavier University of Louisiana College of Pharmacy *Clinical Professor* Louisiana State University Health Sciences Center School of Medicine New Orleans, Louisiana

Cardiology and Nephrology II Panel

Series Editors:

Marcia L. Buck, Pharm.D., FCCP, FPPA, BCPPS

Director, Clinical Practice Advancement American College of Clinical Pharmacy Washington, District of Columbia

Bernard R. Lee, Pharm.D., BCPS, BCPPS

Clinical Pharmacist Department of Pharmacy Mease Countryside Hospital BayCare Health System Safety Harbor, Florida

Kirsten H. Ohler, Pharm.D., BCPS, BCPPS

Clinical Associate Professor, Pharmacy Practice Program Director, PGY1 Pharmacy Residency Clinical Pharmacist, NICU/Pediatrics University of Illinois at Chicago College of Pharmacy University of Illinois Hospital & Health Sciences System Chicago, Illinois

Faculty Panel Chair:

David E. Procaccini, Pharm.D., MPH, BCPS, BCPPS, CACP

Clinical Pharmacy Practitioner, Pediatric Intensive Care & Cardiology/Heart Transplant Department of Pharmacy The Johns Hopkins Hospital Baltimore, Maryland

Arrhythmias

Author

Amanda Baker, Pharm.D., BCPPS

Clinical Manager Department of Pharmacy Arkansas Children's Hospital Little Rock, Arkansas

Brady S. Moffett, Pharm.D., MPH, MBA

Assistant Director—Pharmacy Department of Pharmacy Texas Children's Hospital Assistant Professor, Pediatrics Department of Pediatrics Baylor College of Medicine Houston, Texas

Reviewers

Eric Pfeifer, Pharm.D., BCPPS

Neonatal ICU and Pediatrics Clinical Pharmacist Department of Inpatient Pharmacy PeaceHealth Southwest Medical Center Vancouver, Washington

Alyssa Hobby, Pharm.D., BCPPS

Clinical Pharmacist Department of Inpatient Pharmacy Rady Children's Hospital, San Diego San Diego, California

Anticoagulation in the Pediatric Cardiac Patient

Author

Jessica Otero, Pharm.D.

Clinical Pharmacist | Critical Care | Anticoagulation Seattle Children's Hospital Seattle, Washington

Reviewers

Esther Chu, Pharm.D., BCPS, BCPPS

Pharmacy Team Leader, Critical Care and Cardiology Department of Pharmacy Boston Children's Hospital Boston, Massachusetts

Amy L. Kiskaddon, Pharm.D., BCPPS

CVICU/Cardiac Transplant Clinical Pharmacist Department of Pharmacy Johns Hopkins All Children's Hospital St. Petersburg, Florida

The American College of Clinical Pharmacy and the authors thank the following individuals for their careful review of the Cardiology and Nephrology II chapters:

Joseph M. LaRochelle, Pharm.D., FCCP, BCPPS

Coleman Endowed Professor of Pharmacy Practice and Vice Chair Division of Clinical and Administrative Sciences, Xavier University of Louisiana College of Pharmacy *Clinical Professor* Louisiana State University Health Sciences Center School of Medicine New Orleans. Louisiana

Jennifer Le, Pharm.D., MAS, FCCP, FCSHP, FIDSA, BCPS-ID

Professor of Clinical Pharmacy Skaggs School of Pharmacy and Pharmaceutical Sciences University of California, San Diego La Jolla, California

Cardiology and Nephrology III Panel

Series Editors:

Marcia L. Buck, Pharm.D., FCCP, FPPA, BCPPS

Director, Clinical Practice Advancement American College of Clinical Pharmacy Washington, District of Columbia

Bernard R. Lee, Pharm.D., BCPS, BCPPS

Clinical Pharmacist Department of Pharmacy Mease Countryside Hospital BayCare Health System Safety Harbor, Florida

Kirsten H. Ohler, Pharm.D., BCPS, BCPPS

Clinical Associate Professor, Pharmacy Practice Program Director, PGY1 Pharmacy Residency Clinical Pharmacist, NICU/Pediatrics University of Illinois at Chicago College of Pharmacy University of Illinois Hospital & Health Sciences System Chicago, Illinois

Faculty Panel Chair:

David E. Procaccini, Pharm.D., MPH, BCPS, BCPPS, CACP

Clinical Pharmacy Practitioner, Pediatric Intensive Care & Cardiology/Heart Transplant Department of Pharmacy The Johns Hopkins Hospital Baltimore, Maryland

Renal Dysfunction/Failure/Replacement Therapies in the Cardiac Patient

Author

Jennifer Hewlett, Pharm.D.

Clinical Pharmacist Department of Pharmacy Children's Hospital of Philadelphia Philadelphia, Pennsylvania

Reviewers

Elizabeth A.S. Goswami, Pharm.D., BCPS, BCPPS

Clinical Pharmacy Specialist Department of Pharmacy The Johns Hopkins Hospital Baltimore, Maryland

Titilola Afolabi, Pharm.D., BCPS, BCPPS

Assistant Professor Department of Pharmacy Practice Midwestern University College of Pharmacy–Glendale Glendale, Arizona

Kidney Transplantation

Author

Jennifer Gilarde, Pharm.D.

Clinical Pharmacy Specialist, Solid Organ Transplantation Department of Pharmacy Boston Children's Hospital Boston, Massachusetts

Reviewers

Danielle Lazear, Pharm.D., BCPS

Clinical Pharmacy Specialist Division of Nephrology and Hypertension Cincinnati Children's Hospital Medical Center Cincinnati, Ohio

Richard J. Haftmann, Pharm.D., BCPPS

Pediatric Clinical Pharmacist Department of Pharmacy UC Davis Children's Hospital Sacramento, California

Brent Hall, Pharm.D., BCPPS

Pharmacy Specialist, Pediatrics Department of Pharmacy UC Davis Children's Hospital Sacramento, California

The American College of Clinical Pharmacy and the authors thank the following individuals for their careful review of the Cardiology and Nephrology III chapters:

Joseph M. LaRochelle, Pharm.D., FCCP, BCPPS

Coleman Endowed Professor of Pharmacy Practice and Vice Chair Division of Clinical and Administrative Sciences, Xavier University of Louisiana College of Pharmacy *Clinical Professor* Louisiana State University Health Sciences Center School of Medicine New Orleans, Louisiana

Cardiology and Nephrology IV Panel

Series Editors:

Marcia L. Buck, Pharm.D., FCCP, FPPA, BCPPS

Director, Clinical Practice Advancement American College of Clinical Pharmacy Washington, District of Columbia

Bernard R. Lee, Pharm.D., BCPS, BCPPS

Clinical Pharmacist Department of Pharmacy Mease Countryside Hospital BayCare Health System Safety Harbor, Florida

Kirsten H. Ohler, Pharm.D., BCPS, BCPPS

Clinical Associate Professor, Pharmacy Practice Program Director, PGY1 Pharmacy Residency Clinical Pharmacist, NICU/Pediatrics University of Illinois at Chicago College of Pharmacy University of Illinois Hospital & Health Sciences System Chicago, Illinois

Faculty Panel Chair:

David E. Procaccini, Pharm.D., MPH, BCPS, BCPPS, CACP

Clinical Pharmacy Practitioner, Pediatric Intensive Care & Cardiology/Heart Transplant Department of Pharmacy The Johns Hopkins Hospital Baltimore, Maryland

Interactive Case: QTc Prolongation and Post-Cardiac Surgery Arrhythmias

Author

Susan C. Villegas, Pharm.D., BCPPS

Assistant Professor of Pharmacy Practice Arnold & Marie Schwartz College of Pharmacy and Health Sciences Long Island University Brooklyn, New York *Clinical Pharmacy Manager, Pediatrics* Department of Pharmacy Children's Hospital at Montefiore Bronx, New York

Reviewers

Regine L. White (Caruthers), Pharm.D.

Senior Content Management Consultant—Neonatal/Pediatric Wolters Kluwer: Lexicomp Hudson, Ohio Adjunct Clinical Assistant Professor of Clinical Pharmacy University of Michigan College of Pharmacy Ann Arbor, Michigan

Tara L. Smith, Pharm.D., BCPPS

Clinical Pharmacy Specialist, Pediatrics Department of Pharmacy West Florida Hospital Pensacola, Florida

Dominique Mark, Pharm.D., BCPS, BCPPS

Pediatric Clinical Pharmacist Department of Pharmacy Seattle Children's Hospital Seattle, Washington

Interactive Case: Coagulation Controversies

Author

Christa Jefferis Kirk, Pharm.D., BCCP

Heart Center Clinical Pharmacy Specialist | Anticoagulation | Critical Care Heart Center | Pharmacy Seattle Children's Hospital Seattle, Washington

Jennifer Pak, Pharm.D., CACP

Pediatric Anticoagulation Pharmacy Specialist Co-Chair of Anticoagulation Safety Committee Department of Pharmacy Seattle Children's Hospital Seattle, Washington

Reviewers

Julie S. Pingel, Pharm.D., BCPPS

Clinical Pharmacy Specialist-Pediatric Cardiac ICU Department of Pharmacy Monroe Carell Jr. Children's Hospital at Vanderbilt Nashville, Tennessee

Meghan Baldo, Pharm.D., BCPPS

Clinical Pharmacy Specialist–Neonatal Intensive Care Unit Department of Pharmacy Catholic Health–Sisters of Charity Hospital Buffalo, New York

The American College of Clinical Pharmacy and the authors thank the following individuals for their careful review of the Cardiology and Nephrology IV features:

Joseph LaRochelle, Pharm. D., FCCP, BCPPS

Vice Chair and Clinical Professor Division of Clinical and Administrative Sciences - College of Pharmacy Xavier University of Louisiana *Clinical Professor* Louisiana State University HSC School of Medicine New Orleans, Louisiana