# **DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST**

**Consultancies:** Gabrielle A. Gibson (Portola Pharmaceuticals, Inc.); Curtis E. Haas (Vizient, KJT Consulting, Pharmacy Times); Diana Isaacs (BD; Sanofi); Kim L. Kelly (Abbott Diabetes Care; Johnson & Johnson Diabetes Institute; Becton Dickenson); John M. Moorman (Wolters Kluwer [Lexicomp]); Christie A. Schumacher (Becton Dickenson);

Stock Ownership: Kim L. Kelly (Johnson & Johnson);

# **Royalties:**

Grants: Gregory B. Tallman (Society of Infectious Diseases Pharmacists);

Honoraria: Gabrielle A. Gibson (Portola Pharmaceuticals, Inc.); Diana Isaacs (Abbott); Kim L. Kelly (Johnson & Johnson Diabetes Institute); John M. Moorman (Ohio Society of Health-System Pharmacists); Amy E. Wainright (Midwest Reproductive Symposium International);

Other: Jennifer N. Clements (ASHP);

Nothing to disclose: Sam J. Abid III; Rebekah H. Anguiano; Julie F. Barnes; Carrie Bruno; Andrew S. Bzowyckyj; Mariann D. Churchwell; Kathryn Corlett; Naomi Digiantonio; Jill M. Ender; Cheryl L. Hankins; Kayla A. Hetrick; Soo Min Jang; Ayesha M. Khan; Mollie Lumpkin; Katie S. McClendon; Amy B. Montes; Melissa C. Palmer; Heather L. Peterson; Lalita Prasad-Reddy; Michelle L. Rager; Mohamed Omar Saad; Vicky Shah; Kevin M. Sowinski; Dominick P. Trombetta; Richard Michael Williams

**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. PSAP has been approved by BPS for use in BCPS recertification. Information about the BPS recertification process is available <u>online</u>.

Questions regarding BPS specialty recertification should be directed to:

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

# **ENDOCRINOLOGY I PANEL**

# Series Editors:

# John E. Murphy, Pharm.D., FCCP, FASHP

Professor Emeritus University of Arizona College of Pharmacy Tucson, Arizona

## Mary Wun-Len Lee, Pharm.D., FCCP, BCPS

Vice President and Special Assistant to the President Midwestern University Professor of Pharmacy Practice Chicago College of Pharmacy Downers Grove, Illinois

## **Faculty Panel Chair:**

# Diana Isaacs, Pharm.D., BCPS, BC-ADM, CDE

Endocrine Clinical Pharmacy Specialist Cleveland Clinic Endocrine and Metabolism Institute Diabetes Center Cleveland, Ohio

# **DIABETES MELLITUS**

# Author

## Andrew S. Bzowyckyj, Pharm.D., BCPS, CDE

Associate Professor Pacific University Oregon Hillsboro, Oregon

# Reviewers

# Christie Schumacher, Pharm.D., BCPS, BCACP, BC-ADM, CDE

Associate Professor Department of Pharmacy Practice Midwestern University Chicago College of Pharmacy Downers Grove, Illinois *Clinical Pharmacist* Advocate Medical Group – Southeast Center Chicago, Illinois

# Heather L. Peterson, Pharm.D., BCPS

Health Informaticist, Clinical Pharmacist Indian Health Service/Yakama Indian Health Clinic Toppenish, Washington

# **OBESITY**

# Author

# Jennifer N. Clements, Pharm.D., FCCP, BCPS, BCACP, CDE Clinical Pharmacist – Diabetes Transition Department of Nursing Administration

Spartanburg Regional Healthcare System Spartanburg, South Carolina

## Reviewers

#### Katie S. McClendon, Pharm.D., FCCP, BCPS

Clinical Associate Professor Department of Pharmacy Practice Assistant Dean for Student Services University of Mississippi School of Pharmacy Jackson, Mississippi

## Melissa C. Palmer, Pharm.D., BCPS, BCPP

Clinical Assistant Professor Division of Pharmacy Practice and Administration University of Missouri – Kansas City School of Pharmacy Kansas City, Missouri Clinical Psychiatric Pharmacist North Kansas City Hospital North Kansas City, Missouri

# INFERTILITY

## Author

# Lalita Prasad-Reddy, Pharm.D., MS, BCPS, BCACP, CDE

Clinical Associate Professor Chicago State University College of Pharmacy Clinical Pharmacy Specialist Rush University Internists Associate Discipline Director of Pharmacology Assistant Professor in Internal Medicine Rush Medical College Rush University Medical Center Chicago, Illinois

# Reviewers

#### Amy E. Wainright, Pharm.D., BCACP, BCGP

*Clinical Pharmacist* Northwestern Medicine Specialty Pharmacy Chicago, Illinois

# Jill M. Ender, Pharm.D., BCPS

Informatics Pharmacist Inpatient Pharmacy Winona Health Winona, Minnesota

# Rebekah H. Anguiano, Pharm.D., BCPS, BCACP

*Clinical Pharmacist and Assistant Professor* Department of Pharmacy Practice University of Illinois at Chicago, College of Pharmacy Chicago, Illinois The American College of Clinical Pharmacy and the authors thank the following individuals for their careful review of the Endocrinology I chapters:

# Shannon W. Finks, Pharm.D., FCCP, BCPS (AQ Cardiology)

Professor Department of Clinical Pharmacy University of Tennessee College of Pharmacy *Clinical Pharmacy Specialist, Cardiology* Department of Pharmacy VA Medical Center Memphis, Tennessee

# Anne L. Hume, Pharm.D., FCCP, BCPS

Professor of Pharmacy Department of Pharmacy Practice University of Rhode Island Kingston, Rhode Island Adjunct Professor of Family Medicine Alpert School of Medicine at Brown University Providence, Rhode Island

# **NEPHROLOGY I PANEL**

# Series Editors:

# John E. Murphy, Pharm.D., FCCP, FASHP

Professor Emeritus University of Arizona College of Pharmacy Tucson, Arizona

## Mary Wun-Len Lee, Pharm.D., FCCP, BCPS

Vice President and Special Assistant to the President Midwestern University Professor of Pharmacy Practice Chicago College of Pharmacy Downers Grove, Illinois

## **Faculty Panel Chair:**

# Diana Isaacs, Pharm.D., BCPS, BC-ADM, CDE

Endocrine Clinical Pharmacy Specialist Cleveland Clinic Endocrine and Metabolism Institute Diabetes Center Cleveland, Ohio

# **ACID-BASE DISORDERS**

## Author

# Mollie Lumpkin, Pharm.D., BCPS, BCCCP

Clinical Pharmacy Specialist Department of Pharmacy Cleveland Clinic Cleveland, Ohio

# Reviewers

## Mariann D. Churchwell, Pharm.D., FCCP, BCPS

Associate Professor Pharmacy Practice University of Toledo College of Pharmacy and Pharmaceutical Sciences Toledo, Ohio

#### Richard Michael Williams, Pharm.D., M.S., BCPS

Clinical Associate Professor of Pharmacy LIU A&M Schwartz College of Pharmacy Affiliate Assistant Clinical Professor of Clinical Pharmacy Practice St. John's University College of Pharmacy and Allied Health Professions Affiliate Associate Professor Department of Pharmacy Practice Touro College of Pharmacy New York, New York

# **DRUG DOSING IN DIALYSIS**

## Authors

## Ayesha M. Khan, Pharm.D., BCPS

*Clinical Coordinator & Residency Program Director* Department of Pharmacy UChicago Medicine Ingalls Memorial Hospital Harvey, Illinois

### Reviewers

# Soo Min Jang, Pharm.D.

Assistant Professor Department of Pharmacy Practice Loma Linda University School of Pharmacy Loma Linda, California

# Cheryl L. Hankins, Pharm.D., BCPS

Clinical Pharmacy Specialist Extended Care/Geriatrics U.S. Department of Veterans Affairs Biloxi, Mississippi

# Naomi Digiantonio, Pharm.D., BCPS

Patient Care Pharmacist Mount Carmel Grove City Grove City, Ohio

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

# Judy Cheng, Pharm.D., MPH, FCCP, BCPS (AQ Cardiology)

Professor and Interim Chair of Pharmacy Practice Department of Pharmacy Practice MCPHS University *Clinical Pharmacy Specialist* Department of Pharmacy Brigham and Women's Hospital Boston, Massachusetts

### Mary Wun-Len Lee, Pharm.D., FCCP, BCPS

Vice President and Special Assistant to the President Midwestern University Professor of Pharmacy Practice Chicago College of Pharmacy Downers Grove, Illinois

# **ENDOCRINOLOGY II PANEL**

# Series Editors:

## John E. Murphy, Pharm.D., FCCP, FASHP

Professor Emeritus University of Arizona College of Pharmacy Tucson, Arizona

## Mary Wun-Len Lee, Pharm.D., FCCP, BCPS

Vice President and Special Assistant to the President Midwestern University Professor of Pharmacy Practice Chicago College of Pharmacy Downers Grove, Illinois

## **Faculty Panel Chair:**

# Diana Isaacs, Pharm.D., BCPS, BC-ADM, CDE

Endocrine Clinical Pharmacy Specialist Cleveland Clinic Endocrine and Metabolism Institute Diabetes Center Cleveland, Ohio

# RECORDED WEBCAST: CONTINUOUS GLUCOSE MONITORING SYSTEMS

## Author

# John M. Moorman, Pharm.D., BCPS

Pharmacy Clinical Specialist, Endocrinology Pharmacy Department Cleveland Clinic Akron General Akron, Ohio Associate Professor Department of Pharmacy Practice Northeast Ohio Medical University Rootstown, Ohio

# Reviewers

# Kim L. Kelly, Pharm.D., FCCP, BCPS, CDTC

President Kelly Diabetes Associates, LLC Cupertino, California

# Michelle L. Rager, Pharm.D., BCPS, CDE

*Clinical Pharmacist Practitioner* Department of Pharmacy New Hanover Regional Medical Center Wilmington, North Carolina

## Kathryn Corlett, Pharm.D., BCPS

Clinical Pharmacist Department of Pharmacy Western Reserve Hospital Cuyahoga Falls, Ohio Adjunct Professor of Advanced Pharmacology School of Nursing and Health Sciences Malone University Canton, Ohio

# RECORDED WEBCAST: SUBCUTANEOUS INSULIN INFUSION DEVICES

# Author

## John M. Moorman, Pharm.D., BCPS

Pharmacy Clinical Specialist, Endocrinology Pharmacy Department Cleveland Clinic Akron General Akron, Ohio Associate Professor Department of Pharmacy Practice Northeast Ohio Medical University Rootstown, Ohio

## Reviewers

## Kim L. Kelly, Pharm.D., FCCP, BCPS, CDTC

*President* Kelly Diabetes Associates, LLC Cupertino, California

#### Michelle L. Rager, Pharm.D., BCPS, CDE

Clinical Pharmacist Practitioner Department of Pharmacy New Hanover Regional Medical Center Wilmington, North Carolina

# Kathryn Corlett, Pharm.D., BCPS

Clinical Pharmacist Department of Pharmacy Western Reserve Hospital Cuyahoga Falls, Ohio *Adjunct Professor of Advanced Pharmacology* School of Nursing and Health Sciences Malone University Canton, Ohio The American College of Clinical Pharmacy and the authors thank the following individuals for their careful review of the Endocrinology II features:

# Jeffrey T. Sherer, Pharm.D., MPH, BCPS, BCGP

Clinical Associate Professor Department of Pharmacy Practice and Translational Research University of Houston College of Pharmacy Houston, Texas

# **NEPHROLOGY II PANEL**

# Series Editors:

## John E. Murphy, Pharm.D., FCCP, FASHP

Professor Emeritus University of Arizona College of Pharmacy Tucson, Arizona

## Mary Wun-Len Lee, Pharm.D., FCCP, BCPS

Vice President and Special Assistant to the President Midwestern University Professor of Pharmacy Practice Chicago College of Pharmacy Downers Grove, Illinois

## **Faculty Panel Chair:**

## Diana Isaacs, Pharm.D., BCPS, BC-ADM, CDE

Endocrine Clinical Pharmacy Specialist Cleveland Clinic Endocrine and Metabolism Institute Diabetes Center Cleveland, Ohio

## **Faculty Chair: Statistics in Practice Series**

## Curtis E. Haas, Pharm.D., FCCP

Director of Pharmacy Department of Pharmacy University of Rochester Medical Center Rochester, New York

# RECORDED WEBCAST: RENAL CLEARANCE FORMULAE

## Authors

# Dominick P. Trombetta, Pharm.D., BCPS, BCGP

Associate Professor, Pharmacy Practice Department of Pharmacy Practice Wilkes University, Nesbitt School of Pharmacy Wilkes-Barre, Pennsylvania

## Vicky Shah, Pharm.D., BCPS

Assistant Professor of Pharmacy Practice Department of Pharmacy Practice Wilkes University Wilkes-Barre, Pennsylvania

# Reviewers

# Kayla A. Hetrick, Pharm.D., BCCCP

Critical Care Clinical Pharmacy Specialist Department of Pharmacy Cleveland Clinic Main Campus Cleveland, Ohio

#### Amy B. Montes, Pharm.D., BCPS

Cardiology Clinical Pharmacy Specialist/Educator Baptist Hospital of Miami Miami, Florida

# Carrie Bruno, Pharm.D., BCPS

Clinical Pharmacist Department of Pharmacy Froedtert Kenosha Hospital Kenosha, Wisconsin

# INTERACTIVE CASE: DRUG DOSING IN ACUTE KIDNEY INJURY

## Author

## Gabrielle A. Gibson, Pharm.D., BCPS, BCCCP

Surgical, Trauma, Burn ICU Clinical Specialist Department of Pharmacy Barnes-Jewish Hospital St. Louis, Missouri

## Reviewers

## Julie F. Barnes, Pharm.D., B.S., BCPS

Clinical Coordinator, Internal Medicine Department of Pharmacy Cleveland Clinic Cleveland, Ohio

## Sam J. Abid III, Pharm.D., BCPS

Clinical Pharmacy Specialist – Emergency Medicine Department of Pharmacy Antelope Valley Hospital Lancaster, California

# STATISTICS IN PRACTICE: COMPARING TWO GROUPS, ANALYSIS OF PAIRED DATA

### Author

# Kevin M. Sowinski, Pharm.D., FCCP

Professor of Pharmacy Practice and Associate Head for Faculty Affairs Department of Pharmacy Practice College of Pharmacy, Purdue University West Lafayette and Indianapolis, Indiana Adjunct Professor of Medicine Division of Clinical Pharmacology, Department of Medicine School of Medicine, Indiana University Indianapolis, Indiana

#### Reviewers

#### Curtis E. Haas, Pharm.D., FCCP

Director of Pharmacy Department of Pharmacy University of Rochester Medical Center Rochester, New York

## Gregory B. Tallman, Pharm.D., M.S., BCPS

Assistant Professor School of Pharmacy Pacific University Hillsboro, Oregon

## Mohamed Omar Saad, Pharm.D., BCPS, BCCCP

*Clinical Pharmacy Specialist* Department of Pharmacy Al-Wakra Hospital, Hamad Medical Corporation Doha, Qatar The American College of Clinical Pharmacy and the authors thank the following individuals for their careful review of the Nephrology II features:

## Lynn Kassel, Pharm.D., BCPS

Associate Professor of Clinical Sciences Department of Clinical Sciences Drake University College of Pharmacy & Health Sciences Des Moines, Iowa Acute Care Pharmacist MercyOne West Des Moines Hospital West Des Moines, Iowa

# Ralph H. Raasch, Pharm.D., FCCP, BCPS

Associate Professor of Pharmacy (retired) Division of Practice Advancement and Clinical Education Eshelman School of Pharmacy The University of North Carolina at Chapel Hill Chapel Hill, North Carolina

# Jeffrey T. Sherer, Pharm.D., MPH, BCPS, BCGP

Clinical Associate Professor Department of Pharmacy Practice and Translational Research University of Houston College of Pharmacy Houston, Texas