DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

Consultancies: Gretchen M. Brophy (National Institutes of Health, NINDS, UCB, Chiesi); Katleen W. Chester (Wolters Kluwer); Michael J. Erdman (Wolters Kluwer); Gabriel V. Fontaine (Alexion Pharmaceuticals, AstraZeneca); Christy Cecil Forehand (ACCP, BPS); Shaun Patrick Keegan (Alexion Pharmaceuticals); Melissa A. Nestor (CE Concepts); Christina M. Roels (Joint Commission); Sheri Tokumaru (Hawaii Board of Pharmacy)

Stock Ownership:

Royalties: Xi Liu-DeRyke (Merck & Co., Inc)

Grants: Gretchen M. Brophy (Sage, Department of Defense, Virginia Commonwealth University School of Medicine); Aaron Cook (University Hospital Foundation [Canada]); Sheri Tokumaru (Robert Wood Johnson Foundation, Health Resources & Services Administration)

Honoraria: Nicholas A. Barker (SCCM); Kara L. Birrer (Florida Society of Health-System Pharmacists, Premier GPO Member Meeting); Gretchen M. Brophy (UCB, Chiesi); Christy Cecil Forehand (SCCM); Kristy Greene (Pharmacy Times); David M. Peters (AchieveCE); Nadia Ferguson (Gilead Sciences Inc.); Gabriel V. Fontaine (Alexion Pharmaceuticals, AstraZeneca); Shaun Patrick Keegan (Alexion Pharmaceuticals)

Other:

Nothing to disclose: Abdalla A. Ammar; Michael J. Armahizer; Megan Barra; Laura Blackburn; Lauren B. Chambers; Chad Condie; Laura Carson; James Spencer Dingman; Mahmoud El Morsy; Brian Gilbert; Coral Iserhienrhien; Ramzan Ali Judge; Casey C. May; Jeffrey J. Mucksavage; Kent A. Owusu; Dennis Parker Jr.; David Reynolds; Kaitlyn Robinson; Alison Sabados; Sophie Samuel; Rachael Scott; Keaton S. Smetana; Matthew A. Wanat; Lindsay B. Wilson

ACCP Staff/Series Leaders

Consultancies: Alex Flannery (La Jolla Pharmaceutical Company); Lisa Hall Zimmerman (SCCM [two consultancies], American College of Osteopathic Surgeons [spouse or significant other])

Grants: Alexander Flannery (La Jolla Pharmaceutical Company)

Nothing to disclose: Ed Alderman, Peter Burns, Joanna Gillette, Brent Paloutzian, Kimma Sheldon-Old, Keri Sims

Note: All relevant financial relationships listed for these individuals have been mitigated.

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. CCSAP has been approved by BPS for use in BCCCP recertification. Information about the BPS recertification process is available online.

Questions regarding BCCCP recertification should be directed to:

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

Neurocritical Care I Panel

Series Editors:

Alexander H. Flannery, Pharm.D., Ph.D., FCCP, FCCM, BCCCP, BCPS

Assistant Professor

Department of Pharmacy Practice and Science University of Kentucky College of Pharmacy Critical Care Pharmacist, Medical Intensive Care Unit University of Kentucky HealthCare

Lexington, Kentucky

Lisa Hall Zimmerman, Pharm.D., FCCP, FCCM, BCCCP, BCNSP

Clinical Pharmacist Specialist, Emergency Medicine

Department of Pharmaceutical Services

Beaumont Health, Royal Oak, Michigan

Adjunct Assistant Professor of Pharmacy Practice

Wayne State University, Eugene Applebaum College of

Pharmacy and Health Sciences

Detroit, Michigan

Adjunct Clinical Assistant Professor

Department of Pharmacology and Toxicology

Michigan State University, College of Osteopathic

Medicine

East Lansing, Michigan

Faculty Panel Chair:

Aaron M. Cook, Pharm.D., FKSHP, FCCP, FNCS, BCCCP

Clinical Coordinator - Neuroscience and Pulmonary/Critical

Department of Pharmacy Services

UK HealthCare

Associate Professor

Department of Pharmacy Practice and Science University of Kentucky College of Pharmacy

Lexington, Kentucky

Treatment of Elevated Intracranial Pressure

Authors

Casey C. May, Pharm.D., BCCCP

Specialty Practice Pharmacist – Neurocritical Care
Department of Pharmacy
The Ohio State University Wexner Medical Center

Columbus, Ohio

Keaton S. Smetana, Pharm.D., BCCCP

Specialty Practice Pharmacist – Neurocritical Care Department of Pharmacy The Ohio State University Wexner Medical Center Columbus, Ohio

Reviewers

Sheri Tokumaru, Pharm.D., BCCCP

Associate Professor
Department of Pharmacy Practice

University of Hawaii at Hilo The Daniel K. Inouye College

of Pharmacy

Honolulu, Hawaii

David Reynolds, Pharm.D., BCPS, BCCCP

Clinical Pharmacist Blanchard Valley Hospital Findlay, Ohio

Autoimmune Neuromuscular Disorders

Authors

Katleen Chester, Pharm.D., BCCCP, BCGP

Clinical Pharmacist Specialist, Neurocritical Care Department of Pharmacy and Clinical Nutrition Grady Memorial Hospital Atlanta, Georgia

Kristy N. Greene, Pharm.D., BCPS, BCCCP

Clinical Pharmacist Specialist Emory University Hospital Midtown Atlanta, Georgia

Reviewers

Chad Condie, Pharm.D., BCCCP

Neuroscience Clinical Pharmacist Adjunct Clinical Professor Department of Pharmacy Services University of Utah Health Salt Lake City, Utah

Laura Carson, Pharm.D., BCCCP

Clinical Pharmacist
Department of Pharmacy
Stormont Vail Health
Topeka, Kansas

Neurocritical Care II Panel

Series Editors:

Alexander H. Flannery, Pharm.D., Ph.D., FCCM, BCCCP, BCCCP

Assistant Professor
Department of Pharmacy Practice and Science
University of Kentucky College of Pharmacy
Lexington, Kentucky

Lisa Hall Zimmerman, Pharm.D., FCCP, FCCM, BCCCP, BCCCP, BCNSP

Clinical Pharmacist Specialist, Emergency Medicine
Department of Pharmaceutical Services
Beaumont Health, Royal Oak, Michigan
Adjunct Assistant Professor of Pharmacy Practice
Wayne State University, Eugene Applebaum College of
Pharmacy and Health Sciences
Detroit, Michigan
Adjunct Clinical Assistant Professor
Department of Pharmacology and Toxicology
Michigan State University, College of Osteopathic Medicine
East Lansing, Michigan

Faculty Panel Chair:

Aaron M. Cook, Pharm.D., FKSHP, FCCP, FNCS, BCCCP

Clinical Coordinator - Neuroscience and Pulmonary/Critical Care Department of Pharmacy Services UK HealthCare

Associate Professor

Department of Pharmacy Practice and Science
University of Kentucky College of Pharmacy
Lexington, Kentucky

Aneurysmal Subarachnoid Hemorrhage

Authors

Jeffrey J. Mucksavage, Pharm.D., FNCS, BCPS

Clinical Assistant Professor Clinical Pharmacist University of Illinois Chicago College of Pharmacy Chicago, Illinois

Megan E. Barra, Pharm.D., BCPS, BCCCP

Clinical Pharmacy Specialist, Neurocritical Care
Department of Pharmacy
Massachusetts General Hospital
Boston, Massachusetts

Reviewers

Michael J. Armahizer, Pharm.D., BCCCP

Clinical Specialist – Neurocritical Care Department of Pharmacy University of Maryland Medical Center Baltimore, Maryland

Kaitlyn Robinson, Pharm.D, BCCCP

Clinical Pharmacist, Critical Care and Emergency Medicine
Department of Pharmacy
Hennepin County Medical Center
Minneapolis, Minnesota

Drug-induced Neurotoxicity

Authors

Kent A. Owusu, Pharm.D., FCCM, FNCS, BCPS, BCCCP

Senior Care Signature Lead, Surgical Services
Care Signature, Office of the Chief Medical Officer
Pharmacist, Critical Care
Department of Pharmacy
Yale New Haven Health
New Haven, Connecticut

Abdalla A. Ammar, Pharm.D., FCCM, BCCCP, BCPS

Critical Care Pharmacy Specialist, Neurocritical Care
Department of Pharmacy
New York-Presbyterian/Weill Cornell Medical Center
New York City, New York

Reviewers

Kara L. Birrer, Pharm.D., BCPS

Clinical Pharmacy Specialist, Neurocritical Care
Department of Pharmacy Services
Orlando Health Orlando Regional Medical Center
Orlando, Florida

Coral Iserhienrhien, Pharm.D., BCCCP

Pharmacy Clinical/Operations Manager
Department of Pharmacy
Medical City Lewisville
Lewisville, Texas

Mahmoud M. El Morsy, Pharm.D., MS, BCPS, BCCCP, BCIDP

Critical Care Clinical Pharmacist
Drug Information Pharmacist
Infectious Diseases Pharmacist
Adverse Drug Reaction Clinical Pharmacist
Clinical Pharmacy Department
EBGH
Jeddah, Makkah Region

Neurocritical Care III Panel

Series Editors:

Alexander H. Flannery, Pharm.D., Ph.D., FCCM, BCCCP, BCCCP

Assistant Professor
Department of Pharmacy Practice and Science
University of Kentucky College of Pharmacy
Lexington, Kentucky

Lisa Hall Zimmerman, Pharm.D., FCCP, FCCM, BCCCP, BCCCP, BCNSP

Clinical Pharmacist Specialist, Emergency Medicine
Department of Pharmaceutical Services
Beaumont Health, Royal Oak, Michigan
Adjunct Assistant Professor of Pharmacy Practice
Wayne State University, Eugene Applebaum College of
Pharmacy and Health Sciences
Detroit, Michigan
Adjunct Clinical Assistant Professor
Department of Pharmacology and Toxicology
Michigan State University, College of Osteopathic Medicine
East Lansing, Michigan

Faculty Panel Chair:

Aaron M. Cook, Pharm.D., FKSHP, FCCP, FNCS, BCCCP

Clinical Coordinator - Neuroscience and Pulmonary/Critical
Care
Department of Pharmacy Services
UK HealthCare
Associate Professor
Department of Pharmacy Practice and Science
University of Kentucky College of Pharmacy
Lexington, Kentucky

Early Management of Acute Ischemic Stroke

Authors

Melissa A. Nestor, Pharm.D., BCCCP

Clinical Pharmacist, Critical Care/Stroke Neurology
Department of Pharmacy Services
UK HealthCare
Assistant Professor
Department of Pharmacy Practice and Science
University of Kentucky College of Pharmacy
Lexington, Kentucky

Rachael Scott, Pharm.D., BCCCP

Clinical Pharmacist – Critical Care/Stroke Neurology
Department of Pharmacy Services
UK HealthCare
Lexington, Kentucky

Reviewers

Christina Roels, Pharm.D., BCPS, BCCCP

Clinical Pharmacist

Department of Neurocritical Care

Novant Health Forsyth Medical Center

Winston-Salem, North Carolina

Lindsay B. Wilson, Pharm.D., BCPS, BCCCP

Clinical Pharmacy Specialist – Emergency Medicine
Department of Pharmacy
U of L Health – Jewish Hospital
Clinical Assistant Professor
Department of Pharmacy Practice
Sullivan University College of Pharmacy
Louisville, Kentucky

Refractory Status Epilepticus

Authors

Gretchen M. Brophy, Pharm.D., FCCP, FCCM, FNCS, MCCM, BCPS

Professor

and Neurosurgery Virginia Commonwealth University, Medical College of Virginia Campus, School of Pharmacy Richmond, Virginia

Department of Pharmacotherapy & Outcomes Science

David M. Peters Jr., Pharm.D., BCCCP

Assistant Professor of Pharmacy Practice
Department of Pharmacy Practice
Cedarville University
Cedarville, Ohio
Clinical Pharmacy Specialist, Neurocritical Care
Department of Pharmacy
Miami Valley Hospital
Dayton, Ohio

Reviewers

Michael J. Erdman, Pharm.D., BCPS

Clinical Pharmacist UF Health Jacksonville Jacksonville, Florida

Nicholas A. Barker, Pharm.D., BCCCP

Clinical Pharmacy Specialist, Cardiovascular Intensive Care Unit Emory Healthcare – Emory Saint Joseph's Hospital Atlanta, Georgia

Ramzan Ali Judge Pharm.D., BCCCP

Clinical Pharmacy Coordinator Clinical Pharmacy Specialist, Medical Intensive Care Unit The Deborah Heart and Lung Center Browns Mills, New Jersey

Neurocritical Care IV Panel

Series Editors:

Lexington, Kentucky

Alexander H. Flannery, Pharm.D., Ph.D., FCCM, BCCCP. BCCCP

Assistant Professor

Department of Pharmacy Practice and Science
University of Kentucky College of Pharmacy

Lisa Hall Zimmerman, Pharm.D., FCCP, FCCM, BCCCP, BCCCP, BCNSP

Clinical Pharmacist Specialist, Emergency Medicine
Department of Pharmaceutical Services
Beaumont Health, Royal Oak, Michigan
Adjunct Assistant Professor of Pharmacy Practice
Wayne State University, Eugene Applebaum College of
Pharmacy and Health Sciences
Detroit, Michigan
Adjunct Clinical Assistant Professor
Department of Pharmacology and Toxicology
Michigan State University, College of Osteopathic
Medicine

Faculty Panel Chair:

East Lansing, Michigan

Aaron M. Cook, Pharm.D., FKSHP, FCCP, FNCS, BCCCP

Clinical Coordinator - Neuroscience and Pulmonary/Critical
Care
Department of Pharmacy Services
UK HealthCare
Associate Professor

Department of Pharmacy Practice and Science University of Kentucky College of Pharmacy Lexington, Kentucky

Interactive Case: Literature Evaluation and Grading

Author

Sophie Samuel, Pharm.D., BCPS, BCCCP

Clinical Pharmacist
Department of Pharmacy
Memorial Hermann Medical Center
Houston, Texas

Reviewers

Dennis Parker, Pharm.D., FCCM

Associate Professor
Department of Pharmacy Practice
Wayne State University
Clinical Specialist Neurointensive Care
Department of Pharmacy

Detroit Receiving Hospital Detroit, Michigan

Lauren B. Chambers, Pharm.D., FCCM, BCCCP

Clinical Pharmacist, Critical Care
Department of Pharmacy
Vidant Medical Center
Greenville, North Carolina

Matthew A. Wanat, Pharm.D, FCCM, BCPS, BCCCP

Clinical Associate Professor

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

Interactive Case: Neurogenic Fever

Author

Shaun P. Keegan, Pharm.D., BCPS

Clinical Pharmacy Specialist, Neurocritical Care Department of Pharmacy University of Cincinnati Medical Center Cincinnati, Ohio

Reviewers

Xi Liu-DeRyke, Pharm.D.

Clinical Editor Elsevier/RELX Orlando, Florida

Nadia Ferguson, Pharm.D., BCCCP

Clinical Pharmacy Manager
Department of Pharmacy
Montefiore Medical Center
Bronx. New York

Alison Sabados, Pharm.D., BCCCP

Clinical Pharmacy Coordinator Department of Pharmacy WellSpan York Hospital York, Pennsylvania

Interactive Case: Coma Assessment and Toxicologic Considerations

Authors

Brian Gilbert, Pharm.D., MBA, BCCCP, BCPS

Emergency Medicine Clinical Pharmacy Specialist Department of Pharmacy Wesley Medical Center Wichita, Kansas

J. Spencer Dingman, Pharm.D., BCCCP

Clinical Pharmacy Specialist, Neurocritical Care Barnes-Jewish Hospital St. Louis, Missouri

Reviewers

Gabriel V. Fontaine, Pharm.D., MBA, BCPS

Clinical Pharmacy Manager, Critical Care, Emergency
Medicine, TeleCritical Care
Department of Pharmacy
Advanced Clinical Pharmacist, Neuroscience Critical Care
Associate Professor
Intermountain Healthcare
Salt Lake City, Utah

Christy Cecil Forehand, Pharm.D., FCCM, BCCCP

Critical Care Clinical Pharmacist
Department of Pharmacy
Augusta University Medical Center
Augusta, Georgia

Laura Blackburn, Pharm.D., FCCM, BCPS, BCCCP

Clinical Pharmacy Manager
Department of Pharmacy
Healthtrust
Webster, Texas