

# Identifying and Preventing Medication Errors

## Committee

### J. L. Bootman

#### Co-Chair

Lyle Bootman, Ph.D., is Dean and Professor of the University of Arizona College of Pharmacy. He is the Founding and Executive Director of the University of Arizona Center for Health Outcomes and Pharmacoeconomic (HOPE) Research, one of the first such centers developed in the world. Dr. Bootman also holds a joint appointment of Professor in both the College of Medicine and the College of Public Health. He is the former President of the American Pharmaceutical Association. Dr. Bootman received his pharmacy education at the University of Arizona and his doctorate at the University of Minnesota. Additionally, he completed a clinical pharmacy residency at the National Institutes of Health. Dr. Bootman has received numerous outstanding achievement awards, most notably from the American Association of Pharmaceutical Scientists and the American Pharmaceutical Association. Dr. Bootman has published several books including the first text introducing the Principles of Pharmacoeconomics which is utilized in more than 35 countries and translated into six languages. His research regarding the outcomes of drug-related morbidity and mortality has received worldwide attention by the professional and public media. Dr. Bootman is a member of the Institute of Medicine.

## **Linda R. Cronenwett**

### **Co-Chair**

Linda R. Cronenwett, Ph.D., M.A., R.N. is Professor and Dean of the School of Nursing at the University of North Carolina at Chapel Hill. In 2003 she was appointed the associate chief nursing officer for academic affairs at the University of North Carolina at Chapel Hill Hospitals. Her professional experience includes active duty in the US Navy Nurse Corps, staff nurse experiences in maternity and pediatric nursing, previous faculty positions at Stanford University and the University of Michigan, and fourteen years as a nurse researcher and administrator at Dartmouth-Hitchcock Medical Center in Lebanon, New Hampshire. Prior to her appointment as dean, she was the Sarah Frances Russell distinguished professor of nursing systems at UNC-Chapel Hill.

Dr. Cronenwett is the current president of the North Carolina Deans and Directors of Baccalaureate and Higher Degree Nursing Programs. She served as president of the New Hampshire Nurses Association and chair of the American Nurses Association's Congress of Nursing Practice. She is a member of the Robert Wood Johnson Foundation's Transforming Care at the Bedside National Advisory Committee and the Hastings Center's Ethical Issues in Improving Healthcare Quality and Safety Project. Prior to these appointments she served as a member of the National Advisory Council for Nursing Research at the National Institutes of Health and as a member of the editorial advisory board of the Joint Commission Journal on Quality Improvement. Additionally, Dr. Cronenwett is an elected fellow of the American Academy of Nursing and the National Academies of Practice.

## **David W. Bates**

### **Member**

David Bates, M.D. is Chief of the Division of Internal Medicine at the Brigham and Women's Hospital in Boston, Massachusetts, and a Professor at Harvard Medical School and the Harvard School of Public Health, where he is co-director of the Program in Clinical Effectiveness. He is also the Medical Director of Clinical and Quality Analysis for Partner's Healthcare Systems, where he evaluates the impact of information systems across the Partner's network. Dr. Bates' primary interest has been the use of computer systems to improve care and he has conducted extensive work on evaluating the incidence and preventability of adverse drug events. At the national level, Dr. Bates is the Chair of the National Alliance for Primary Care Informatics, and served as one of two Science Advisors to the SCRIPT project, which developed medication indicators for the Centers for Medicare and Medicaid Services. In addition, he serves as an advisor to the Leapfrog Group on computer order entry, and is the editor of the Journal of Clinical Outcomes Management. Dr. Bates received his M.D. from Johns Hopkins University School of Medicine in 1983; and, in 1990, he received his M.Sc. from the Harvard School of Public Health. Dr. Bates is a practicing, Board-certified physician in Internal Medicine.

# Robert M. Califf

## Member

Robert Califf, M.D., graduated from Duke University, summa cum laude and Phi Beta Kappa, in 1973 and from Duke University Medical School in 1978, where he was selected for Alpha Omega Alpha. He performed his internship and residency at the University of California at San Francisco and his fellowship in Cardiology at Duke University. He is board-certified in Internal Medicine (1984) and Cardiology (1986) and is a Fellow of the American College of Cardiology (1988). He is currently Associate Vice Chancellor for Clinical Research, Director of the Duke Clinical Research Institute (DCRI), and Professor of Medicine, Division of Cardiology, at the Duke University Medical Center, Durham, NC. He has served as an editor of landmark textbooks on cardiovascular medicine and has been an author or coauthor of more than 650 peer-reviewed journal articles. Dr. Califf has led the DCRI efforts for many of the best-known clinical trials in cardiovascular disease. He is considered an international leader in the fields of health outcomes, quality of care, and medical economics. Additionally, he has served on the Cardiorenal Advisory Panel of the U.S. Food and Drug Administration (FDA) and the Pharmaceutical Roundtable of the Institute of Medicine (IOM). He also served on the IOM Committee that recommended Medicare coverage of clinical trials and he is Director of coordinating center for the Centers for Education & Research on Therapeutics (CERTs), a public-private partnership among the Agency for Healthcare Research and Quality, the FDA, academia, the medical products industry, and consumer groups. This partnership focuses on research and education that will advance the best use of medical products. Since the committee's initial bias and conflict review, Dr Califf has established a personal consulting contract with Merck for less than \$10,000.

## **H. E. Cannon**

### **Member**

H. Eric Cannon, Pharm.D. is the Director of Pharmacy Services and Health and Wellness at IHC Health Plans a division of Intermountain Health Care (IHC) in Salt Lake City, Utah. IHC is an integrated health care system with 20 hospitals, 68 physician clinics and surgery centers and more than 450 employed community-based physicians. Dr Cannon has worked in pharmacy for the past fifteen years. He received his Doctor of Pharmacy degree from Idaho State University. He has pharmacy experience in hospital, retail, long term care and home health areas. Dr Cannon is a member of the Academy of Managed Care Pharmacy and currently serves on the legislative committee, which he will chair, in the coming year. At IHC Health Plans, Dr Cannon works to develop, implement and administer programs to control cost and utilization of pharmaceuticals within the IHC system. He makes frequent presentations to employers, brokers and healthcare providers on pharmaceutical trends and pharmaceutical management techniques. Dr Cannon has responsibility for the management and administration of pharmaceuticals used by IHC's members. As co-chairman of IHC's Corporate Pharmacy and Therapeutics Committee, he helps promote physician/pharmacy education and interaction programs, as well as formulary development and maintenance. Through IHC Health Plans, he is working to incorporate outcomes based pharmacoeconomic research in the formulary process. Recently, Dr Cannon helped establish Utah AWARE. Utah AWARE is an alliance of health care providers, payers and the pharmaceutical industry in the state of Utah that are working to educate the community about appropriate antibiotic use. He is actively involved in Intermountain's efforts with clinical integration, disease management and research. In addition to his responsibilities for Pharmacy, Dr Cannon oversees all health and wellness programs for the plan. He is currently working with employers to implement health management strategies to improve employee productivity and decrease absenteeism.

## **Rebecca W. Chater**

### **Member**

Rebecca Chater, M.P.H. has 20 years experience in community pharmacy. She is currently Group Manager of Clinical Services for Kerr Drugs, a Carolina-based drug store chain. In 1998-2000, she was a visiting clinical assistant professor in the Clinical Department of Pharmacotherapy, University of North Carolina School of Pharmacy. She has been active in the National Association of Boards of Pharmacy and the American Pharmacists Association (formerly the American Pharmaceutical Association). Ms. Chater earned her B.S. degree in pharmacy and Masters degree in Public Health from the University of North Carolina at Chapel Hill.

## **Michael R. Cohen**

### **Member**

Michael R. Cohen, Sc.D. is president of the Institute for Safe Medication Practices, an independent non-profit agency that reviews medication error reports submitted by practitioners to the national medication errors reporting programs operated by the United States Pharmacopeia (USP) and the US Food and Drug Administration. ISMP also provides expert analysis of medication-related events for the Patient Safety Authority of the Commonwealth of Pennsylvania, which operates the Pennsylvania Patient Safety Reporting System (Pa-PSRS). Through various professional journals, newsletters, websites, and four ISMP Medication Safety Alert! publications tailored for consumers, acute care, nurses, and community/ambulatory care providers, ISMP regularly provides drug safety alerts to an estimated 3.5 million US and international readers. Dr. Cohen serves as associate editor of the Journal Hospital Pharmacy and is on the editorial boards of The Joint Commission Journal on Quality and Safety (JCAHO), Journal of Intravenous Nurse Society, Nursing 2004, and Healthcare Risk Control (ECRI, Plymouth Meeting, Pennsylvania). He also is a member of the Sentinel Event Advisory Group for JCAHO, and a member of the Drug Safety and Risk Management Advisory Panel, U.S. Food and Drug Administration. Cohen is also author of the book Medication Errors (APhA, 1999).

## **James B. Conway**

### **Member**

James B. Conway, M.S. has served as Executive Vice President and Chief Operating Officer of the Dana-Farber Cancer Institute since 1995. He is also President of the Healthcare Dimensions Hospice and Deputy Director of the Dana-Farber/Brigham and Women's Cancer Center. Prior to joining Dana-Farber he had a 27-year career at Children's Hospital, Boston as Radiology Administrator, AVP of Finance, and Assistant Hospital Director for Patient Care Services. He holds a Master of Science degree from Lesley College, Cambridge, Massachusetts and serves on the adjunct faculty of Lesley and the Harvard School of Public Health. A diplomat of the American College of Healthcare Executives, Conway received the College's 1999 Massachusetts Regents Award as Healthcare Executive of the Year and the first Individual Leadership Award in Patient Safety from JCAHO and NCQA. He serves as a member of the JCAHO Sentinel Events Advisory Committee, advisor to the Massachusetts Coalition for the Prevention of Medical Errors and, Distinguished Advisor to the National Patient Safety Foundation. He is also a member of the Clinical Issues Advisory Council of the Massachusetts Hospital Association, a member of the executive committee of the Medical, Academic and Scientific Community Organization (MASCO), and a longtime member of the board of the Ronald McDonald House in Boston.

## **R. S. Evans**

### **Member**

R. Scott Evans, Ph.D., M.S. is a Senior Medical Informaticist in the department of Medical Informatics at LDS Hospital and Intermountain Health Care, the Director of Research in the Department of Medical Informatics at LDS Hospital, a Research Professor in the Department of Medical Informatics and an adjunct Research Professor in the Department of Medicine at the University of Utah, Salt Lake City, Utah. Dr. Evans received his BS degree in Zoology and MS degree in Microbiology/Parasitology from Brigham Young University. He received his PhD in Medical Biophysics & Computing from the University of Utah. He is a member of the American Medical Informatics Association and is a Fellow in the American College of Medical Informatics. In 1993 he received the "Priscilla M. Mayden Award" for outstanding contribution in the field of Medical Informatics and in 1997 received the "Osler's Cloak" award for excellence in caring and curing from Intermountain Health Care. His major experience and interests have been in the design, development, and evaluation of computerized tools for the selection and management of anti-infective agents, computer methods to identify and reduce adverse drug events and adverse medical device events, computerized methods to identify patients needing isolation, computerized methods to identify and reduce hospital-acquired infections and using medical device interfaces to improve patient safety. A number of these computerized tools are clinically operational at several hospitals at Intermountain Health Care.

## **Elizabeth A. Flynn**

### **Member**

Elizabeth Flynn, Ph.D., R.Ph is an Associate Research Professor in the Department of Pharmacy Care Systems at Auburn University's Harrison School of Pharmacy. She received her B.S. degree in Pharmacy from the University of Florida, M.S. in Hospital Pharmacy from the University of North Carolina, and Ph.D. in Pharmacy Care Systems from Auburn University. Her practice experience includes hospital, outpatient, and community pharmacy. Dr. Flynn was selected as the Outstanding Graduate Student at Auburn University in 1994. She was a Fellow of the American Foundation for Pharmaceutical Education from 1990-1993. Her areas of expertise include medication errors, pharmacy facility design, pharmacy automation, human factors, and medication systems design. Dr. Flynn has published or presented nearly 100 papers, including "Fundamentals of Medication Error Research" and has been a co-investigator on numerous research projects in the department. Since the committee's initial bias and conflict review, Dr Flynn has been invited to serve on the United States Pharmacopeia (USP) Safe Medication Use Expert Committee for the period 2005-2010.

## **Jerry Gurwitz**

### **Member**

Jerry Gurwitz, M.D. is a nationally recognized expert in geriatric medicine and the use of drug therapy in the elderly. He holds the Dr. John Meyers Endowed Chair in Primary Care Medicine at the University of Massachusetts Medical School, where he is Chief of the Division of Geriatric Medicine and Professor of Medicine and Family Medicine/Community Health. He also serves as the Executive Director of the Meyers Primary Care Institute, a joint initiative of the Fallon Foundation and the University of Massachusetts Medical School, focused on promoting primary care research and education. He received his A.B. degree from Dartmouth College and his M.D. degree from the University of Massachusetts Medical School. Dr. Gurwitz has published numerous original articles, reviews, commentaries, and book chapters on the optimal use of drug therapy in elderly patients. He has been the recipient of the William B. Abrams Award in Geriatric Clinical Pharmacology from the American Society for Clinical Pharmacology and Therapeutics and the George F. Archambault Award from the American Society of Consultant Pharmacists. Dr. Gurwitz's most recent research efforts relate to developing and testing interventions to reduce the risk of medication errors that lead to adverse drug events in the elderly.

## **Charles B. Inlander**

### **Member**

Charles B. Inlander is President of the nonprofit People's Medical Society founded in early 1983. Mr. Inlander has guided the People's Medical Society to its status as one of the most influential consumer health advocacy organizations in the United States. Mr. Inlander is a faculty lecturer at the Yale University School of Medicine, an adjunct faculty member at the Chicago-Kent College of Law and a Fellow of the Institute for Science, Law and Technology at the Illinois Institute of Technology. He is a health commentator on Public Radio International's Marketplace, heard throughout the country on public radio stations. He is a founder of the Civil Justice Foundation and serves, or has served, on the board of directors of Consumers for Civil Justice, the National League for Nursing, the Pennsylvania League for Nursing and the Lehigh Valley Business Conference on Health Care. He is on the advisory boards of the Citizen Advocacy Center, the Primary Care Management Association, the American Academy of Family Physicians, Health Market and Bottom Line/Personal Publications. He was a columnist in Nursing Economics and a contributing editor for Medical Self-Care magazine. He has authored or co-authored more than 20 best-selling consumer health books. His articles regularly appear in such publications as The New York Times, Glamour, and Boardroom. Prior to joining the People's Medical Society, Mr. Inlander established a national reputation as an advocate for the rights of handicapped citizens. He is a graduate of American University. Since the committee's initial bias and conflict review, Mr. Inlander has become a consultant on care giving with Johnson and Johnson.

## **Kevin B. Johnson**

### **Member**

Kevin Johnson, M.D., M.S. is an Associate Professor and Vice Chair of Biomedical Informatics, with a joint appointment in the Department of Pediatrics at Vanderbilt University Medical School. He received his M.D. from Johns Hopkins University School of Medicine and his M.S. in Medical Informatics from Stanford University. He served as a Pediatric Chief Resident at Johns Hopkins. He was a member of the faculty in both Pediatrics and Biomedical Information Sciences at Johns Hopkins until 2002. He is a practicing, board certified physician in Pediatrics. His research areas are clinical information systems development; the uses of advanced computer technologies, including the World Wide Web, personal digital assistants, and pen-based computers in medicine; and electronic prescription writing tools. Dr. Johnson has served on the editorial boards of the Ambulatory Pediatrics Association as well as the Journal of American Informatics Association (JAMIA), of which he is an Assistant Editor. He recently was appointed as the Director of JAMIA's Student Editorial Board. He has been an active participant in the informatics efforts of many national organizations, including the American Medical Informatics Association; the American Board of Pediatrics; the Medical Informatics Special Interest Group of the Ambulatory Pediatrics Association, the American Academy of Pediatrics' Steering Committee on Clinical Information Technologies, and the Patient Safety Data Standards subcommittee of the Institute of Medicine.

## **Wilson D. Pace**

### **Member**

Wilson D. Pace, M.D. is a Professor of Family Medicine and the Green-Edelman Chair for Practice-based Research at the University of Colorado. He is the Director of the American Academy of Family Physicians National Research Network. He also directs SNOCAP, a consortium of practice-based research networks within the University of Colorado. Dr. Pace's research has focused on practice reorganization and patient safety. He leads a patient safety consortium within Colorado focused on improving care delivery in primary care offices as well as overseeing the AAFP Developing Center for Evaluation and Research in Patient Safety in Primary Care. He serves in an advisory capacity to a number of clinical and research health information technology projects. Dr. Pace received his MD degree from the University of California, Irvine in 1979. He is a board-certified practicing Family Physician with a CAQ in Geriatrics

## **Kathleen Stevens**

### **Member**

Kathleen R. Stevens, Ed.D., M.S., R.N., FAAN, is professor of nursing at The University of Texas Health Science Center at San Antonio, Texas. She is also founding director of the Academic Center for Evidence-based Practice, where she works to advance evidence-based quality improvement through research, education, and practice. She is an investigator with the Veterans Evidence-based Research, Dissemination, and Implementation Center for the Veterans Health Administration, with emphasis on systematic reviews and organizational change for evidence-based quality improvement. Her research includes comparison of evidence-based and traditional interventions in reducing health risk behavior as well as investigations of evidence-based practice processes. She serves as an advisor to hospitals seeking magnet recognition status and faculty updating education programs on the topic of evidence-based quality improvement. Dr. Stevens initiated the Summer Institute on Evidence-Based Practice, a national interdisciplinary conference receiving funding from the Agency for Healthcare Research and Quality (AHRQ). At the national level, Dr. Stevens is an elected officer on the board of governors of the National League for Nursing, a leading nursing education organization that sets standards for faculty and nursing education programs. She received her bachelor of science degree in nursing from Northwestern State University of Louisiana, her master of science degree in maternal child health from Texas Woman's University, and her doctorate in health science research and education from the Baylor College of Medicine/University of Houston program, and is a Fellow of the American Academy of Nursing.

## **Edward Westrick**

### **Member**

Edward Westrick, M.D., Ph.D., M.S. is the Vice President of Medical Management for U Mass Memorial Health Care. During the last ten years Dr. Westrick has worked with multiple Quality Improvement Organizations in Medicare's Health Care Quality Improvement Program and served on the American Health Quality Association's Leadership Team and Medical Affairs Executive Committee. He frequently serves on expert panels and boards for such national organizations as USP, NCQA, JCAHO, CMS, AHQA, VA, MedPAC, APhA, and RAND. His particular areas of expertise include performance measurement and medication management. He previously directed the SCRIPT Project on behalf of the Coalition for Quality in Medication Use. Dr. Westrick is board certified in Internal Medicine and Quality Assurance & Utilization Review. He serves on the faculties of the University of Rhode Island and Brown University Medical School and the medical staffs of Roger Williams Medical Center and Eleanor Slater Hospital. His educational history includes: Internship & Residency (Internal Medicine) from Brown University, MD from New Jersey Medical School, PhD from the University of Rhode Island (Pharmacoepidemiology & Pharmacoeconomics), MS from Rutgers University (Psychology), and BA from the University of Pennsylvania (Psychology).

# Albert W. Wu

## Member

Albert W. Wu, M.D., M.P.H., is professor of health policy and management at the Johns Hopkins Bloomberg School of Public Health, with joint appointments in Epidemiology and International Health, and in Medicine and Surgery in the School of Medicine. He received bachelor of arts and M.D. degrees from Cornell University, and completed internal medicine residency training at the Mount Sinai Hospital in New York and the University of California at San Diego. He was a Robert Wood Johnson Clinical Scholar at the University of California at San Francisco and received a master of public health degree from the University of California at Berkeley. His research and teaching focus on measuring health and patient outcomes and using the measures to assess treatments and quality of care. He has studied the handling and impact of medical errors since 1988. He is an authority on the development and use of patient-reported outcome assessments for HIV/AIDS as well as other chronic diseases and critical illness. Dr. Wu is past president of the International Society for Quality of Life Research. He was senior associate editor of the Journal of General Internal Medicine and is associate editor of Quality of Life Research, the Journal of Patient Safety, and AHRQ Web M&M. He was co-principal investigator of an AHRQ-funded grant that developed a web-based incident reporting system for intensive care units. He is principal investigator on a NCI grant to develop a web-based mechanism to capture patient-reported data for outpatient practice. He is principal investigator of the AHRQ-funded Johns Hopkins DEcIDE center to conduct rapid, policy relevant studies of comparative effectiveness. He is studying video vignettes of disclosure to patients and their families, and recently developed an educational video for practitioners "Removing insult from injury: disclosing adverse events." He is author of over 200 peer-reviewed publications, leads courses in the Bloomberg School of Public Health on patient reported outcomes, quality of care, and patient safety, and is an active clinician in general internal medicine and HIV.