

Annual Report - January 2000

Pursuing Our Mission

The Pharmaceutical Outcomes Research and Policy Program was initiated in mid-1995 with the goal of "advancing the health of the public through improving decision-making regarding pharmaceutical therapy and policy." It has expanded its programs and further pursued its mission in four related areas:

To provide graduate and postgraduate training in pharmaceutical outcomes research and policy.

During the last year, Program faculty have achieved important milestones in expanding educational activities, both for University of Washington students and outside professionals in the field of pharmaceutical outcomes research and policy. The Department of Pharmacy accepted five students to the graduate program in Pharmaceutical Outcomes. Students currently enrolled in the program include:

Deborah Atherly, BS Pharmacy, MPH, University of Washington
Denise Boudreau, BS, MS, University of Rhode Island
Holly Carlton, BA, Hampshire College, PharmD, University of Washington
Nathorn Chaiyakunapruk, PharmD, University of Wisconsin
Brian Custer, BS, University of Oregon, MPH, University of Washington
*Thy Do, MS, State University of New York, MPH Yale University
*Christopher Flowers, BA, MD, MS, Stanford University
Mitchell Higashi, MBA, University of British Columbia
Todd Lee, PharmD, Drake University
Kristin Marciante, BS, MPH, Emory University
*Nina Oestreicher, BS, University of Pennsylvania, MS, University of Washington
*Karen Smith, BA, Sweet Briar College, BS, University of Montana
*Scott Strassels, BS, University of Arizona, PharmD, University of Washington

*Enrolled Fall, 2000

Fellowships

Roche Fellowship in Pharmacoeconomic Research - Preceptor: David Veenstra

1st year Fellow: Joanna Huang, PharmD, University of California, San Francisco, BS, Boston University

2nd year Fellow: Beth Devine, PharmD, University of the Pacific, MBA, University of San Francisco

Student Awards and Achievements

Magnuson Scholar

Kristin Marciante is the recipient of the Magnuson Scholar Award. The Scholars Program is part of the Warren G. Magnuson Institute for Biomedical Research and Health Professional Training, established in 1991 in honor of the late Washington senator.

International Society for Pharmacoeconomic and Outcomes Research Awards: 2000

Beth Devine, PharmD, MBA, Roche Fellow, received 2 awards at the 2000 ISPOR Conference. In the category Best New Investigator Poster Presentation, she received "Best Poster" for her work entitled: "Management Strategies for Ribavirin-induced Hemolytic Anemia in the Treatment of Hepatitis C: Clinical and Economic Implications." She also received the award for Best New Investigator Podium Presentation for her presentation entitled: "Health State Preferences in Diabetic Peripheral Neuropathy."

Donna Marshall, PharmD, MS, a 1999 graduate from the UW received "Best New Investigator Poster Presentation" for the poster titled, "Neuroleptic Drug Exposure and Tardive Dyskinesia: A Records Based Case-Control Study." Tom Hazlet, Jackie Gardner and David Blough were co-authors on this presentation.

David Veenstra and Mitch Higashi won the ISPOR 2000 "Best Contributed Paper" award for their work entitled: "Pharmacogenomics: Evaluating the Economic Impact."

To disseminate timely information regarding pharmaceutical outcomes research and policies to government, the pharmaceutical industry, health care providers, and the general public.

- Beginning with the Fall 1999 edition, the PORPP Report is now in an electronic format. It is available for download as a PDF file on the PORPP website, and it will be emailed to all subscribers. The website is: <http://depts.washington.edu/porpp>
- "Pharmacogenomics: The Cost-Effectiveness of Individualized Drug Therapy" was the title of the lead article written by David Veenstra and Mitch Higashi in the Spring PORPP Report. Tom Hazlet's synopsis of his report to the Washington State Insurance Commissioner's Office appeared in the Summer PORPP Report.
- Gibaldi's Drug Therapy 2000: A Critical Review of Therapeutics, recently published by McGraw- Hill, provides an up-to-date review on topics including new drugs, new uses for existing drugs, drugs about to be marketed, alternative and complimentary drugs and drug safety.
- Eric Johnson, PhD presented a paper at the 16th International Conference on Pharmacoepidemiology in Barcelona, Spain. The title of the presentation was, "The Risk of Hypoglycemia Associated with Angiotensin-converting Enzyme (ACE) Inhibitors in Diabetic Patients Treated with Insulin."
- David Veenstra, PharmD, PhD, presented his research in Paris at the Risk and Prevention 2000 meeting in the session "Strategies Against Foreign Body Infections." Dr. Veenstra presented a paper on the cost-effectiveness of antibacterial coated catheters, an extension of his recently published papers on antiseptic coated catheter technology. Dr. Veenstra also presented a talk in Las Vegas at the ASHP meeting entitled, "Genomics: Impact on the Pharmaceutical Industry and the Business of Healthcare."
- Sean Sullivan was one of five drug evaluation experts assembled by the Academy of Managed Care Pharmacy to prepare a format for drug formulary submissions. The document was presented by Dr. Sullivan at the AMCP's educational conference in San Diego. The final format is available at: <http://www.amcp.org>.

Continuing Education Conferences, 2000

- A Spring Clinical Conference in Palm Springs, California was successful in bringing together physicians, pharmacists, nurses and nurse practitioners from all over the western United States. The two day conference held April 30 - May 1, 2000 was titled: "New Approaches to Allergic Rhinitis, Asthma, Osteoarthritis and Osteoporosis." Experts presented evidence-based and cost effective approaches to the treatment of common clinical problems encountered in primary care practice. The program was planned through the joint efforts of the School of Medicine, Division of Allergy and Infectious Disease, Continuing Medical Education, Continuing Pharmacy Education and the PORPP Program within the School of Pharmacy. It was made possible through unrestricted educational grants by AstraZeneca, Aventis, Eli Lilly and Company, Merck and Company, Pfizer Pharmaceuticals and Schering/Key Corporation.
- The Fifth Annual Summer Institute: "Genetics in the New Millennium: Myths, Medicine and Public Health" was held at the Bell Harbor International Conference Center on July 17 & 18, 2000. Over 80 health care providers and public health scientists including primary care physicians, nurse practitioners, and pharmacists attended the two-day conference. The course provided an overview of how rapid advances in human genetics and molecular biology are impacting public health and clinical medicine. Ethical, legal and social implications were examined. Attendees obtained a

multidisciplinary perspective on advances in genetics and became better able to address genetics services needs in their respective settings.

- An educational symposium for pharmaceutical formulary decision-makers was held in September at the Woodmark Hotel in Kirkland, Washington. The title of the symposium was "Demystifying Health Outcomes & Pharmacoeconomic Information for Drug Formulary Decisions". The purpose of the meeting was to educate the attendees in the concept of critically evaluating and using health outcomes and pharmacoeconomic information to determine drug formulary decisions. Eli Lilly sponsored the conference. Future conferences of this type are planned for 2001.
- The Fall PORPP Clinical Conference was held November 4, 2000, at the Four Seasons Olympic Hotel in Seattle. This conference was planned jointly with the School of Medicine, Division of Allergy and Infectious Disease. The title of the conference was: "New Directions in the Management of Allergy, Asthma, Arthritis and Osteoporosis." Over 100 pharmacists, physicians, nurse practitioners, registered nurses and other healthcare personnel attended the program.
- The Cost and Outcomes Grand Rounds is a quarterly research and policy seminar jointly sponsored by PORPP, the Center for Cost and Outcomes Research and the Center for AIDS Research. It is being funded through unrestricted educational grants by Bristol-Myers Squibb, Pfizer Pharmaceuticals and Novartis Pharmaceuticals. The Winter Quarter seminar was presented by Andrew Briggs, PhD, Health Economics Research Centre, University of Oxford. The title was: "Missing...presumed at random: cost-effectiveness analysis with incomplete data." Gerry Oster, PhD, from Policy Analysis, Inc., Brookline, MA, presented the Fall seminar entitled: "Designing and Analyzing Large, Simple Cost-Effectiveness Trials."

To conduct research on the use and effects of pharmaceuticals in human populations.

Program faculty have received funding from private and government entities to conduct research projects related to pharmaceutical outcomes and policy. Major studies are underway on the health and cost outcomes of infectious diseases; of chronic diseases such as asthma, hypertension, depression, schizophrenia, and end-stage renal disease; on issues affecting women's health; on the safety of selected pharmaceutical and biotechnology products; and on pharmaceutical care practice.

- Berlex Laboratories and Life Cor have initiated a program of research with the University of Washington PORPP program to investigate the cost-effectiveness of wearable cardiac defibrillator technology. Sean Sullivan will direct these projects.
- David Veenstra received a grant from the University of Washington National Institute of Environmental Health Sciences Center for Ecogenetics and Environmental Health. The title of this grant is, "The role of CYP2C9 geno-type in modulating the risk from exposure to exogenous substrates: Warfarin and the risk of adverse bleeding events."
- Scott Ramsey received a grant from the National Cancer Institute the title of which is, "Feasibility of linking state health plan and Regence Blue Shield claims with data from the SEER cancer registry."
- Grants received by Warren Narducci include support from Novartis, Eli Lilly and Parke-Davis to research the effects of a pharmacist-directed hypertension clinic, and support from the institute for the Advancement of Community Pharmacy for a Community Pharmacy Residency Program. He also received support from Searle for research on the "Pharmacists' role in colorectal cancer screening."
- Sean Sullivan received a grant from Genentech, Inc. for "Development and Validation of a Total Symptom Complex Questionnaire for Use in Patients with Chronic Bronchitis."
- Dr. David Veenstra and PhD student Mitch Higashi worked with Philippe Hujoel, DDS, PhD and Michael del Aguila, PhD to develop a disease simulation model to evaluate the clinical and economic impact of the use of a genetic test to predict a patient's predisposition to periodontal disease. This model assisted Washington Dental Service in making reimbursement decisions for this genetic test.

- Eric Johnson and David Blough are co-investigators on a grant from the Quality Care Research Fund for a study entitled, "Evaluation of an Intervention to Improve Control of Type 2 Diabetes Mellitus, Medication Adherence, and Medication Safety in Adults." Peggy Odegard, PharmD, Clinical Assistant Professor in the Department of Pharmacy is the principal investigator. The objective of the study is to improve blood sugar control in individuals with type 2 diabetes mellitus (DM) through improved compliance and safety with the use of DM drug therapies by adding a clinical pharmacist to the University of Washington Physicians Network health care team. The role of the clinical pharmacist will be to provide diabetes education based on the subject's personal educational needs and abilities, support safe and effective use of prescribed medicines by the subject, and work with the primary care provider to identify optimal drug treatments for the subject's diabetes.
- Eric Johnson received a grant from GlaxoSmithKline for a study titled, "The Epidemiology and Cost of Drug Therapy for Diabetes: a Population-Based Cohort Study." Most studies on the epidemiology and cost of drug therapy for diabetes have described patients enrolled in traditional (closed-model) health maintenance organizations (HMOs). However, findings from HMOs may not reflect prescribing patterns and patient compliance in other insurance settings. This study will investigate these pharmaceutical outcomes in a healthcare insurance claims database with a mixture of insurance plans (e.g., fee for service).
- Jackie Gardner is the principal investigator of a grant sponsored by the Program for Appropriate Technology in Health to help provide access to emergency contraception throughout Eastern Washington where rural counties have a higher rate of Medicaid births. The collaborative drug therapy agreements are signed by physicians and nurse practitioners working in partnership with pharmacists in these counties. The program is funded for one year.

Selected Publications

Program faculty made numerous presentations at professional and academic meetings and generated many scholarly articles. A partial list is included.

David Blough, Ph.D., Clinical Assistant Professor

Blough DK, Ramsey SD. Using generalized linear models to assess medical care costs. Health Services and Outcomes Research Methodology 2000; 1; 185-202.

Gardner JS, Blough DK, Drinkard CR, Shatin D, Anderson G, Graham D, Alderfer R. Tramadol and seizures: a surveillance study in a managed care population. Pharmacotherapy. 2000 Dec; 20(12):1423-31.

Jacqueline Gardner, Ph.D., Associate Professor

Marciante K, Gardner J, Veenstra DL, Sullivan SD. An analysis of the cost and outcomes of emergency contraception prescribed by a pharmacist in Washington state. In press, Am J Public Health.

Gardner JS, Blough DK, Drinkard CR, Shatin D, Anderson G, Graham D, Alderfer R. Tramadol and seizures: a surveillance study in a managed care population. Pharmacotherapy. 2000 Dec; 20(12):1423-31.

Sommers SD, Chaiyakunapruk N, Gardner JS. An Assessment of the Emergency Contraception Collaborative Prescribing Experience in Washington State. JAPhA 2001; 41: 1-7.

Gardner JS, Hutchings J, Fuller T, Marciante K, Sommers S, Chaiyakunapruk N, Winkler J, Downing D, Leversee J. Increasing emergency contraceptive availability through community pharmacies: Acceptability and cost impact. Submitted. (Family Planning Perspectives)

Sucato G, Gardner JS, Koepsell T. Adolescents' use of emergency contraception provided by Washington State pharmacists. Submitted (Journal of Pediatric and Adolescent Gynecology)

Milo Gibaldi, Ph.D., Professor

Gibaldi M, Gibaldi's Drug Therapy 2000, McGraw Hill.

Gibaldi M, Pharmaceutical News Report Column, Pharmaceutical News (Bi-monthly)

Gibaldi M, The Business of Pharmaceuticals Column, Pharmaceutical News (Bi-monthly)

Gibaldi M, The Pharmaceutical Reports Column, <http://www.pharmsci.org/journal> American Association of Pharmaceutical Scientists

Gibaldi M, Drug Therapy Topic Supplement, Drug Information Topics, University of Washington Medical Center

Tom Hazlet, Pharm.D., Dr. P.H., Assistant Professor

Chew LD, O'Young TS, Hazlet TK, Bradley KA, Maynard C, Lessler DS. A physician survey of the effect of drug sample availability on physicians' behavior. *J Gen Intern Med* 2000; 15(7):478-483.

O'Young T, Hazlet TK. Removal of drug samples from two teaching institutions [letter]. *Am J Health Syst Pharm* 2000; 57(12):1179-1180

Hazlet TK, Lee TA, Hansten PD and Horn JR. Performance of Community Pharmacy Drug Interaction Software. [Accepted for publication, *J Am Pharm Assoc* (Wash)].

Hansten PD, Horn JR, Hazlet TK. An Operational Classification of Drug Interactions. [Accepted for publication, *J Am Pharm Assoc* (Wash)].

Hazlet TK, Bach M, Newcomer T. Survey of Pharmacy Benefits, prepared for Washington State Office of the Insurance Commissioner, Spring 2000.

Scott Ramsey, M.D., Ph.D., Assistant Professor

Blough DK, Ramsey SD. Using generalized linear models to assess medical care costs. *Health Services and Outcomes Research Methodology*, In Press

Etzioni R, Ramsey SD, Berry K, Brown M. The Impact of Including Future Medical Care Costs When Estimating the Costs Attributable to a Disease: A Colorectal Cancer Case Study. *Health Economics*, In Press

Goldberg HI, Neighbor WE, Cheadle AD, Ramsey SD, Diehr P, Gore E. A controlled time-series trial of clinical reminders: using computerized firm systems to make quality-improvement research a routine part of mainstream practice. *Health Services Research* 2000; 34: 1519-34.

Ramsey SD. Suboptimal medical therapy in chronic obstructive lung disease: Exploring the causes and consequences. *Chest* 2000; 117(2 Suppl):33S-7S.

Sullivan SD, Ramsey SD, Lee TA. The economic burden of COPD. *Chest*. 2000 Feb; 117(2 Suppl):5S-9S.

Ramsey SD, Freedman AN, Berry K, Anderson MR, Urban N. Prevalence of pedigrees suggestive of hereditary nonpolyposis colorectal cancer among a community sample of women eligible for screening mammography. *Community Genetics* 2000; 2: 173-178.

Ramsey S, Kelley K, Bowdle A. clinical and economic effects of pulmonary artery catheterization in non-emergent coronary artery bypass graft surgery. Submitted to Journal of Cardiothoracic and Vascular Anesthesia 2000; 14: 113-8.

Ramsey S. Quality of life in survivors of colorectal carcinoma. Cancer 2000; 88: 1294-303.

Ramsey SD, McIntosh M, Sullivan SD. Design issues for conducting cost-effectiveness analyses alongside clinical trials. Annual Review of Public Health 2000, In Press.

Sean Sullivan, Ph.D., Associate Professor

Sullivan SD, Ramsey SD, and Lee TA. The economic burden of COPD. Chest 2000; 117(2): 5S-9S.

Nash DB, Sullivan SD, Mackowiak J. Optimizing quality of care and cost effectiveness in treating allergic rhinitis in a managed care setting. American Journal of Managed Care 2000; 6(1) Supp: S3-S15.

Saint S, Veenstra DL, Sullivan SD, Chenoweth C, Fendrick AM, Preventing urinary tract infections using catheters coated with silver alloy: a cost-effectiveness analysis. Archives of Internal Medicine 2000; 160: 2670-2675.

Signatories to the Consensus Statement. Decision analytic modeling in the economic evaluation of health technologies: a consensus statement. Pharmacoeconomics 2000; 17(5): 443-444.

Weiss KB, Sullivan SD, Lyttle CS. Trends in the costs of asthma in the United States, 1985-1994. Journal of Allergy and Clinical Immunology 2000; 106: (3): 493-499.

Ramsey SD, McIntosh M, Sullivan SD. Design issues for conducting cost-effectiveness analyses alongside clinical trials. Annual Review of Public Health 2000, In Press.

David Veenstra, Pharm.D., Ph.D., Assistant Professor

Consensus statement. Decision analytic modelling in the economic evaluation of health technologies. Pharmacoeconomics, 2000; 17: 443-444.

Saint S, Veenstra DL, L BA. The clinical and economic consequences of nosocomial central venous catheter-related infection. Infection Control and Hospital Epidemiology, 2000; 21: 1-6.

Veenstra DL, Higashi MK, Phillips KA. Assessing the cost-effectiveness of pharmacogenomics. AAPS PharmSci 2000; 2: article 29 (<http://www.aaps.org/journals/pharmsci/veenstra/manuscript.html>)

Saint S, Veenstra DL, Sullivan SD. The potential clinical and economic benefits of silver alloy urinary catheters in preventing urinary tract infection. Arch Intern Med, 2000; 260: 2670-2675.

Lee TA, Sullivan SD, Veenstra DL, et al. The costs and outcomes of using cidofovir for treating CMV-retinitis. Pharmacoeconomics, In Press.

Phillips KA, Veenstra DL, Sadee W. Implication of the human genome project for health services research: Pharmacogenomics. Health Services Research, In Press.

To affect regional and national policies pertaining to pharmaceuticals and pharmaceutical services.

Program faculty also affected policy development by serving on a number of national and international advisory boards and committees for organizations including among others, National Institutes of Health, World Health Organization, Agency for Health Care Policy and Research, Regence Blue Shield, American Pharmaceutical Association Quality STAT, Drug Information Association, American Association of Colleges

of Pharmacy, National Committee for Quality Assurance Measurement Advisory Committee on Asthma, American Public Health Association, State of Washington Medicaid Program, and regional pharmacy and therapeutics committees. Faculty are also active on the advisory boards of many pharmaceutical companies.

Faculty Notes

Gibaldi Receives Millennial Award

Dean Emeritus Milo Gibaldi was one of 21 scientists worldwide honored as "Millennial Pharmaceutical Scientists" at the Millennial World Congress of Pharmaceutical Scientists, April 16-20, 2000 in San Francisco. Along with other outstanding contributors to the pharmaceutical sciences from around the world, Dr. Gibaldi received an honorarium of \$2,000 and a plaque. He was nominated for the award by the American Association of Pharmaceutical Scientists.

Jacqueline Gardner Honored by Washington State Pharmacists

Dr. Gardner received WSPA's 2000 Special Achievement Award for her tireless work with students, public health care facilities and pharmacists on important public health issues.

Sullivan and Ramsey Named to NIH Panel

Sean Sullivan, PhD and Scott Ramsey, MD, PhD have been named to the World Health Organization NHLBI-sponsored Global Initiative on Obstructive Lung Disorder (GOLD). They contributed two review papers on economic and social burden and economic evaluations of prevention and treatment strategies to the international consensus report that was released at the 2000 European Respiratory Society meeting in Florence, Italy.

Financial Contributions

The accomplishments of the Pharmaceutical Outcomes Research & Policy Program in 2000 would not have been possible without generous educational grants provided by our sponsors.

We wish to express our sincere gratitude to:

AstraZeneca, LP
Aventis
Bayer Pharmaceutical Division
Berlex Laboratories
Bristol-Myers Squibb
Eli Lilly and Company
Merck & Co., Inc.
Novartis Pharmaceuticals Company
Parke-Davis
Pfizer, Inc.
Procter & Gamble
Schering Laboratories
Wyeth-Ayerst Laboratories

Faculty

David Blough, Ph.D., Clinical Assistant Professor of Pharmacy

Dr. Blough earned his Ph.D. in Statistics at Iowa State University. He has served as collaborating statistician on numerous research projects within the department including research on asthma, risk of

seizure associated with tramadol, adverse drug reactions in the elderly and the evaluation of reference based pricing in British Columbia. In addition, Dr. Blough has contributed to medical risk adjustment methodology and to the development of risk adjustment technology for the Washington Health Care Authority and Hawaii Medical Services Association. His areas of emphasis are generalized linear models, the analysis of longitudinal data and mixed models.

Jacqueline Gardner, Ph.D., Associate Professor of Pharmacy

Dr. Gardner earned her degree in Epidemiology from the University of Washington School of Public Health and Community Medicine in 1980. From 1980 to 1992 she worked for The Upjohn Company, ultimately becoming Director of Drug Epidemiology. Gardner's research focuses on use and effects of drugs in women and children and upon innovative pharmacy practice. Her projects have included examination of the use of hormone replacement therapy by menopausal women and the association of maternal drug use during pregnancy with craniosynostosis. She is responsible for evaluation of demonstration projects designed to explore the outcomes of extending prescriptive authority to pharmacists to provide emergency contraceptive pills, and of management of hyperlipidemia by community pharmacists. Gardner is a member of the American Association of Colleges of Pharmacy, the Washington State Pharmacists Association, the Drug Information Association and the International Society of Pharmacoepidemiology, American Pharmaceutical Association and the Association of Reproductive Health Professionals.

Milo Gibaldi, Ph.D., Dean Emeritus of the School of Pharmacy, Professor of Pharmaceutics and Pharmacy

From 1978 to 1995 Dr. Gibaldi served as Dean of the School of Pharmacy at the University of Washington where he also was Associate Vice President for Health Sciences and Chair of the Board of Deans. He is a fellow of the Academy of Pharmaceutical Sciences and of the American Association for the Advancement of Science and was elected to the Institute of Medicine of the National Academy of Science. In 1976 he was honored with the Academy of Pharmaceutical Sciences Research Achievement Award for Stimulation of Research, and in 1980 he was elected Honorary President of the Australia/New Zealand Association for the Advancement of Science, Section on Pharmaceutical Sciences. He is a consultant to the Bureau of Drugs of the Food and Drug Administration and to the Department of Medicine and Surgery of the Veteran's Administration. He has also been active as a consultant in drug therapy for pharmaceutical firms including among others, Roche, Ciba Geigy, Ortho, Glaxo-Wellcome, and Searle. He is the author of nearly 200 articles and book chapters, has published four books and is the editor of the *PORPP Report* and scientific editor of *Pharmacotherapy*. Dr. Gibaldi earned his B.C. from Columbia College of Pharmacy and his Ph.D. from Columbia University.

Thomas Hazlet, Pharm.D., Dr. P.H., Assistant Professor of Pharmacy

Dr. Hazlet completed a doctorate in Pharmacy at the University of California, San Francisco and a residency in hospital pharmacy at Yale-New Haven Hospital. He earned a doctorate in public health in the Health Policy and Administration Program from the School of Public Health at the University of California, Berkeley. His prior experiences include industrial microbiology with Baxter Healthcare Corporation, parenteral nutrition with University of California Los Angeles Medical Center's Home Parenteral Nutrition Program, and pharmacy practice in a community hospital. Most recently, Dr. Hazlet has been a Food and Drug Scientist with the California Department of Health Services' Food and Drug Branch and a member of the Food and Drug Administration's Pacific Region Biotechnology Team. His regulatory activities included reviewing investigational new drug applications and acting as technical liaison with field investigator staff, clinical sponsors, industry representatives, and legislators. Dr. Hazlet plans to continue his research in drug regulation, pharmaceutical policy, and bioethics and has established policy research programs with Washington's Departments of Labor and Industries and Social and Health Services (Medicaid), and with British Columbia's Ministry of Health and Ministry Responsible for Seniors.

Eric Johnson, MPH, Ph.D., Assistant Professor, Department of Pharmacy

Dr. Johnson is an epidemiologist who specializes in using healthcare databases to answer applied research questions regarding pharmaceutical products. He earned an MPH in Health Services Research at the University of Washington in 1994 with a concentration in pharmacoconomics and outcomes research. He

earned his PhD in epidemiology in 1999, also at the University of Washington. Most of his research concerns measuring outcomes in patients with diabetes. Dr. Johnson currently works with investigators at the Channing Laboratory, Brigham and Women's Hospital to study diabetes disease management in a New England health maintenance organization (HMO), Harvard Pilgrim Health Care. His teaching interests focus on evaluating drug safety and describing the burden of disease. Prior to joining the Department of Pharmacy, Dr. Johnson worked as a consultant epidemiologist for the firm Epidemiology Resources, Inc. (ERI) in Newton, Massachusetts. At ERI, Dr. Johnson conducted epidemiologic studies in a variety of therapeutic areas to support New Drug Applications (NDAs) and to evaluate post-marketing safety. After completing a bachelor's degree at Emory University, he began his career in epidemiology at the U.S. Centers for Disease Control and Prevention (CDC) where he evaluated the safety of blood products and the effectiveness of blood donor screening policy. He is currently a member of the International Society of Pharmacoepidemiology (ISPE) and the Drug Information Association, (DIA).

Warren Narducci, Pharm.D., Associate Professor of Pharmacy

Dr. Narducci earned his B.S. and Pharm.D. degrees from the University of Nebraska Medical Center College of Pharmacy. He served as a member of the faculty at Nebraska from 1978 through 1998, including eleven years as the Chair of the Department of Pharmacy Practice before joining the faculty of the University of Washington. Currently, Dr. Narducci is Associate Professor and Director of the Bracken Pharmaceutical Care Learning Center, Department of Pharmacy. He supervises the School of Pharmacy Community Pharmacy Residency Program, which currently has two residents in training at Washington pharmacies. He has served as principal investigator or co-investigator on research and program grants in the areas of cancer prevention and education, implementation of innovative services in community pharmacies, and delivery of technology-based drug information and health education services. His current research interests include evaluation of clinical outcomes of community pharmacy-based patient care services, including colorectal cancer screening, and impact of pharmacy design and workflow on delivery of patient care services in community pharmacies. Dr. Narducci has had memberships and numerous activities in professional organizations, including currently serving on committees for the American Pharmaceutical Association and National Association of Boards of Pharmacies.

Scott Ramsey, M.D., Ph.D., Director, Cancer Outcomes Research Program, Fred Hutchinson Cancer Research Center & Assistant Professor of Pharmacy (Adjunct)

Dr. Ramsey obtained his medical degree from the University of Iowa and a Ph.D. in economics from the Wharton School at the University of Pennsylvania. He completed his residency in internal medicine at the University of Washington, where he also was elected Chief Medical Resident for the University Hospital. He also completed a General Internal Medicine fellowship at the Seattle VA Medical Center. He is currently Director of the Cancer Outcomes Research Program at the Fred Hutchinson Cancer Research Center in Seattle. He has served as the Health Analyst for the United States Senate Budget Committee. His areas of interest include cost-effectiveness analysis and evaluation of health insurance on the adoption and utilization of new medical technologies. His findings from cost-effectiveness studies related to hypertension, urinary incontinence, lung transplantation, and drugs used for HIV prevention have been published in several journals and presented at numerous national meetings. His current projects include cost-effectiveness and quality of life analyses of colon cancer screening and lung reduction surgery for severe emphysema, an economic evaluation of genetic screening for colorectal cancer susceptibility, and a project to risk adjust the HEDIS health plan performance measures.

Sean Sullivan, Ph.D., Director, Pharmaceutical Outcomes Research & Policy Program, Associate Professor and Director, Graduate Programs, Department of Pharmacy

Dr. Sullivan earned his Ph.D. in Health Economics and Policy from the University of California, Berkeley, an M.S. in Pharmacy Administration from the University of Texas, and a BS in Pharmacy from Oregon State University. He completed an AHCPH-sponsored fellowship in Health Policy at the University of California, San Francisco Institute for Health Policies Studies and an NIH-funded fellowship in the Economics of Aging at the University of California, Berkeley. Currently, Dr. Sullivan is Associate Professor and Director of the Health Services Research Core of the University of Washington Center for AIDS Research. He supervises the Department of Pharmacy graduate program in pharmaceutical outcomes research and policy and the Roche/University of Washington post-graduate fellowship in Pharmacoconomics. He serves as principal

investigator or co-investigator on numerous health services research and pharmaceutical costs and outcomes assessment grants and contracts and has published more than 100 papers, book chapters and books. He serves on the editorial boards of *PharmacoEconomics*, *Pharmacotherapy*, and *Cancer and Managed Care*. His current research interests include evaluation of economic and health outcomes of interventions for respiratory disorders, end-stage renal disease, diabetes, cardiovascular disease, osteoporosis, and several mental health disorders.

David Veenstra, Pharm.D, Ph.D., Director, PORPP Post Doctoral Programs, Assistant Professor of Pharmacy

David Veenstra graduated from the University of California San Francisco in 1996, where he completed concurrent doctoral programs in clinical pharmacy and medicinal chemistry. His dissertation work focused on studying the effect of amino acid mutations on protein stability using computer modeling and simulation techniques. Dr. Veenstra conducted his postdoctoral training in pharmacoeconomics with the University of Washington from 1997-1999, spending one year working with Roche Global Pharmacoeconomics in Palo Alto, CA. His methodological research interests are in cost-effectiveness modeling, including decision analysis, Markov modeling, and Monte Carlo simulation. He has conducted extensive research in the area of medical device evaluation, particularly on evolving technologies for the prevention of device-related infections. Dr. Veenstra's current research is on the clinical, economic, and health policy implications of drug therapy based on a patient's genotype, or pharmacogenomics. His projects include evaluation of the impact of amino acid mutations in drug metabolizing enzymes on anticoagulation therapy and in oncology, and the potential role of genotyping in the treatment of Alzheimer's Disease and hyperlipidemia. Dr. Veenstra is a member of the Society for Medical Decision Making, the International Society for Pharmacoeconomics and Outcomes Research, the International Health Economics Association, the American Society of Health-Systems Pharmacists, the Association for Professionals in Infection Control and Epidemiology, and the American Association for the Advancement of Science.

Post-doctoral fellows

Shelby Reed, Ph.D., Research Associate

Dr. Reed earned her Ph.D. and B.S. in Pharmacy from the University of Maryland. In 2000, she completed a two-year, PORPP-sponsored post-doctoral fellowship at the University of Washington School of Pharmacy and the Center for AIDS Research. Dr. Reed is currently a Research Assistant Professor in the Center for Clinical and Genetic Economics within the Duke Clinical Research Institute at Duke University. Her current research interests include developing new costing methodologies and conducting economic evaluations of pharmaceuticals using data from multinational clinical trials.

David Smith, Ph.D., Research Associate

David Smith is Investigator at the Center for Health Research, Kaiser Permanente, in Portland, Oregon. His work is primarily focused on the economics and epidemiology of medication use. He is currently a co-investigator with the AHRQ funded HMO Research Network Center for Education on Therapeutics (CERT), a collaborative research effort of 9 HMOs. Other work includes economics of new cancer therapies and new treatment for macular degeneration. Dr. Smith is also in active collaboration with researchers from the University of York (UK) where he was a post-doctoral fellow at the Centre for Health Economics. He earned his PhD (1998) and undergraduate Pharmacy degree (1990) from the University of Washington School of Pharmacy. He also holds an MHA from the University of Washington School of Public Health.

Staff

Mary Anderson, R.R.T., M.P.H., Project Director

Ms. Anderson as Project Director coordinates the research staff for the various study projects that are active and on-going. She also interviews study subjects and analyzes the questionnaires.

Cindy Bush, Program Operations Coordinator

Ms. Bush coordinates the Graduate and Fellowship Programs. She also creates and develops promotional materials, including the PORPP web pages, and serves as the contact person for current and prospective faculty, fellows, students and staff.

Penny Evans, Program Coordinator

Ms. Evans coordinates the PORPP programs including continuing education conferences, seminars and special events. She also assists in the editing, preparation and dissemination of the quarterly newsletter *The PORPP Report*.