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It gives me immense pleasure to write to you as the incoming Director of the University of Washington Pharmaceutical Outcomes Research and Policy Program and provide you, on behalf of the program, its annual report. This annual report also marks the beginning of the twentieth-year anniversary of the program. To commemorate this occasion, we have developed this report to celebrate the program’s past, to cherish its present, and to think big for its future. As you will see in reviewing this, PORPP continues to grow in number and in the achievements of its talented and dedicated staff working collaboratively across a wide range of disciplines. However, this success is built on the shoulders of its founding members, alumni and our corporate advisors whose continued support is instrumental to our success in the future. It is providence that two of our founding members, Andy Stergachis and Sean Sullivan are now steering the Dean’s office in the School of Pharmacy.

This past year has been an exceptionally strong year of achievements for our program. Professor Lou Garrison was elected to be the incoming President of ISPOR. In the 2015 ISPOR Annual meeting, Research Assistant Professor Aasthaa Bansal won the best podium by a new investigator, PhD student Kai Yeung won the best podium by student, post-doc Julia Slejko won the best poster by a new investigator, and alumnus Chris Wallick won the best poster award. Alumnus Joshua Roth received the ISPOR Applied Paper of the year award and, more recently, the Award for Outstanding Paper by a Young Investigator from the Society for Medical Decision Making. Aasthaa Bansal received the PhRMA 2015 new investigator fellowship while PhD student William Canestaro received the PhRMA 2015 pre-doctoral fellowship. Research assistant professor Ryan Hansen led-work linking use of sleeping pills and motor vehicle crashes which drew national and international attention. Finally, in a historic move, and based on decades of work by the School of Pharmacy faculty, especially Professor Don Downing, Washington will be the first state in the country to require that pharmacists are included in health insurance provider networks under new legislation (SB 5557) signed by Governor Inslee on Monday, May 11, 2015. This creates tremendous opportunity for PORPP faculty to engage in many facets of policy designs and evaluations.

Our training programs are going strong. For this coming year, we are admitting another strong new graduate program cohort. Professors Hazlet, Devine, Garrison, Carlson, and Veenstra recruited our top candidates, who are profiled here. Our Distance Learning Certificate in Health Economics and Outcomes Research will welcome another large batch of students this fall. We have now trained nearly 200 students through this mechanism.

I would like to thank Professor Lou Garrison for serving as the Interim Director for the program this past year and making my transition as smooth as possible. I would also thank all of our past and present Corporate Advisory Board members for their continued support to the program. The Outcomes CAB will also celebrate its fifteenth anniversary this year and a profile on its history with PORPP is provided in this report. Finally, I want to thank Penny Evans and Paul Kraegel, our superb program and research coordinators, who help to make all of this possible. This also marks Penny’s twentieth year of service to PORPP and a full profile of her contributions to the program is highlighted here. This 20th anniversary report is dedicated to her.

Anirban Basu, PhD, Professor, Stergachis Family Endowed Director, PORPP, Adjunct Professor, Health Services
PORPP has been extremely fortunate to have Penny Evans work with PORPP faculty, students and staff throughout its entire 20-year history. Starting as a Program Coordinator in 1995, she helped with the initial database for the mailing of the then quarterly “PORPP Report”. As the Graduate Program Advisor and Program Operations Specialist for the past 13 years, she has been the heart and soul of the program. She has coached and encouraged all of our graduate students. And she has always served as the warm and friendly face of the program to outsiders.

Penny’s list of contributions is endless: organizing recruiting activities for new students, mentoring current students in fulfilling course and dissertation requirements, attending and assisting with our weekly graduate seminar, handling the PORPP financial accounts, assisting students to organize general exam and dissertation defenses, coordinating and administering our prelim exams, representing PORPP in departmental administrative coordination, and so on.

Penny is the ultimate team player: doing whatever she can to help both PORPP and the Department. Dean Sullivan has called her: “the perfect employee-assistant: whenever there is a PORPP or school event, Penny is either planning it, coordinating it, or helping make it successful.” She focuses on the positive in her colleagues and students, and helps to bring out the best in all of us.

This past year, the Department of Pharmacy nominated Penny for the prestigious University of Washington Distinguished Staff Award. Here is an excerpt from one of the nomination letters:

“...She has supported every program graduate and faculty member since the program was founded in 1995, and her touch is noted by all as critical to the program’s success...”

Even though she was not one of the five winners out of 60 nominees, we all consider her a “winner” in her own right.

Penny is a keeper of the history of PORPP, having contributed to much of it and documenting what has occurred in words and photos. We dedicate this 20th Anniversary Report to her, with deep gratitude for what she has done to make PORPP what it is today.
OUR PAST

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“Great scientists and great surfers share a common trait. They don’t position themselves where the big wave is now; they position themselves where the next big wave is going to be. PORPP teaches students to read the patterns in scientific methods, to understand the history that built up behind the last big waves, and to prepare for the ride of your life when you finally catch the big one.”

MITCH HIGASHI, ’01, GE HEALTHCARE’S CHIEF ECONOMIST
The Pharmaceutical Outcomes Research and Policy Program (PORPP) began largely out of a response to student and workforce needs. In 1989, Andy Stergachis, the current Associate Dean for Research, Graduate Programs and New Initiatives, was recruited from Group Health's Center for Health Studies by Dean Milo Gibaldi to join the then-Department of Pharmacy Practice. Stergachis was advising David H. Smith, a student looking to begin a Ph.D., when he had a “lightbulb” moment that ultimately led to the founding of PORPP.

Smith knew he wanted to do his doctorate work in Pharmacy, but UW did not offer a Ph.D. in Pharmacy. In the end, Smith chose an unconventional route and created his own interdisciplinary graduate program of study. As the School's first Ph.D. graduate in pharmacy outcomes research, Smith went on and has achieved national prominence as Senior Investigator at Kaiser Permanente Center for Health Research.

What stayed with Stergachis was the need for a formal Ph.D. program in Pharmacy. Gibaldi, who had long wanted a doctoral program in Pharmacy, was very supportive. And with that, Stergachis and others began to develop a plan.

In 1990, Stergachis was awarded the Burroughs Wellcome/American College of Preventive Medicine Scholar in Pharmacoepidemiology Award, a 5-year career development award. The funding from that award provided much-needed seed funding for salaries, curriculum development, and support for new visiting faculty and fellows to the burgeoning program, including epidemiologist Dr. Jackie Gardner and a newly-minted Ph.D. from UC Berkeley named Sean D. Sullivan.

Sullivan and Stergachis first met at an APhA meeting in Washington DC. Sullivan was looking forward to beginning his new position at Wolfson College at Oxford University. But fate (and Stergachis) had a different plan.

He presented Sullivan with the vision of a program the caliber of which had not been seen in outcomes research. Sullivan was intrigued. When Stergachis showed up—in person—at Berkeley a few weeks later, Sullivan said yes. “And then I had to write the most difficult letter of my professional career. After all, who says ‘no’ to Oxford?” said Sullivan. “But it changed my life.”

Stergachis reflected, “Sean was the catalyst to carry the vision of a Ph.D. program forward and to extend the nascent program into the field of pharmacoeconomics.” With that, Gardner and Sullivan joined a small group of existing UW Pharmacy faculty working in pharmaceutical outcomes and policy that included Dale Christensen and Bill Fassett.

The development of the new Pharmacy Ph.D. program then began in earnest.

The team began the appeal for external support by writing grants to study the safety and value of pharmaceuticals as well as testing the effectiveness of pharmaceutical care services. They sought national recognition to build program credibility. They offered workshops about pharmaceutical outcomes, pharmacoeconomics and drug safety, giving a multitude of presentations to establish a national identity. They sought funding to establish an endowment for graduate students, and began to gain attention and support from a few forward-thinking pharmaceutical companies, including Eli Lilly & Company and then-Immunex Corporation.

By 1995, the team had attracted top scholars and built enough support and funding that the time was right to secure an official Program designation at the UW as the Pharmaceutical Outcomes Research and Policy Program in the Department of Pharmacy. The team submitted the proposal to the UW for PORPP and its new graduate program in 1995. By 1997, the first class of Ph.D. students began.

“Andy's vision took a lot of insight into the future interest in outcomes and policy research. What he created was ahead of its time. The hallmark of our program is its proven impact on local and national policy.” —Sean D. Sullivan
PORPP: THE BUILDING A BLUEPRINT FOR PROGRAM GROWTH

Ask any of the four directors of PORPP, Stergachis, Sullivan, Lou Garrison, or Anirban Basu, and they will tell you that the success of the program is in its people: Find the best faculty, the best graduate students, the best post-docs, and the program will thrive.

New faculty were attracted to the nascent program, including former FDA scientist Tom Hazlet who began a certificate in Biomedical Regulatory Affairs (BRAMS) in 1998 that became a master’s degree program ten years later. With the foundation built, the reins were handed over to Sullivan who became the new director, ushering in a new period of growth for the start up program.

Within a couple of years, new faculty, including former post-docs Beth Devine and Dave Veenstra, joined. The program was accredited by the Graduate School. The Corporate Advisory Board (CAB), comprised of leaders in the pharmaceutical and managed care industries, had its inaugural meeting, creating an opportunity for researchers and leaders to share findings, discuss opportunities and industry needs.

Key partnerships were formed with other organizations including CHASE Alliance, Hutchinson Institute for Cancer Outcomes Research at Fred Hutch, Health Services, Group Health Research Institute, and Premera Blue Cross. These partnerships continue to provide extraordinary opportunities for collaborations, data sharing, student and faculty research, and joint and affiliate faculty appointments.

As partnerships grew, so did endowments and funding. In 2006, Lou and Fran Garrison established the PORPP Endowed Prize in Health Policy and Economics in honor of Lou’s parents, Louis Sr. and Marilyn. Initially funded anonymously, the Prize was designed to inspire students in PORPP.

After graduating, students became advocates and exemplars of the excellence for which PORPP has become known. Mitch Higashi, for example, led an initiative to establish the Health Technology Fund for PORPP, through a collaboration of pharmaceutical and health care firms in 2010. Two years later he and his wife, Mandy, established the Higashi Family Endowed Fund, a graduate and post-doctoral fellow travel fund within the PORPP program.

The Certificate in Health Economics and Outcomes Research, a distance-learning certificate offered through Professional and Continuing Education began in 2011. The program continues to thrive and is completely self-sustaining. As of last fall, over 120 students have been trained.

Garrison, Basu and Devine established one of the first Centers of Excellence in Comparative Effectiveness Research with funding from the PhRMA Foundation in 2011. The Center provides advanced training in research methods to PORPP and Health Services graduate students.

Under Sullivan’s visionary leadership, PORPP joined the Agency for Healthcare Research and Quality’s (AHRQ) Evidence-based Practice Center Initiative in 2012, partnering with investigators at Oregon Health & Science University and Spectrum Research of Tacoma, WA. First led by Sean and Jerry Jarvik of UW Medicine’s Department of Radiology, the current site co-Principal Investigators are Beth Devine and John Gore. (See separate section in this report)

That same year, Andy and JoAnn Stergachis established the Stergachis Family Endowed Directorship, ensuring the program is led by a dynamic and internationally recognized director and that the legacy of providing each student with specialized training in outcomes research is strengthened and enhanced.

“Sean took the program to a new level and I think it’s phenomenal. He did a superb job of institutionalizing the elements of PORPP that continue to this day and into the future.”—Andy Stergachis
PORPP: TO THE FUTURE AND BEYOND A BLUEPRINT FOR CONTINUED IMPACT

In 2014, Sullivan was appointed Dean of UW School of Pharmacy and a national search began for a new Stergachis Family Endowed Director for PORPP. In May 2015, the successful search concluded with the selection of Anirban Basu, Ph.D.

At the time, Basu was a Professor of Health Services and an Adjunct Professor of Pharmacy and Economics. He continues affiliations with Health Services and Economics and co-directs the Program in Health Economics and Outcome Methodology (PHEnOM), a joint program between Departments of Health Services and PORPP. “He is a well-established researcher and mentor,” said Lingtak-Neander Chan, Interim Chair for the Department of Pharmacy. “His work in comparative effectiveness and health economics research is internationally recognized.”

Shortly after his appointment, Basu, Veenstra, and Josh Carlson got word of their $3M grant, funded by the National Heart, Lung, and Blood Institute (NHLBI) of NIH. They will develop a comprehensive toolkit of pragmatic value of information approaches and the corresponding software that can readily be used by clinical researchers and funders to estimate the value of randomized clinical trials.

“Dr. Basu is an incredible, dynamic leader and one of the brightest minds in the field. He is just the right person to take PORPP to its next level of growth: continuing its stability by creating opportunities for our junior faculty, students, and post-docs; growing partnerships with industry; and informing public policy with world-class research.”—Sean Sullivan

The future of PORPP is bright and wide open, poised to address many global and national challenges: from continued opportunities to inform national policy, to creating research to support the implementation of the Affordable Care Act and triple aim health care, to guiding best practices with the increase in personalized medicines, to understanding how human behavior affects medication adherence and clinical results, to the rise of technology in healthcare, to growing the international platform and linking with the important work done in the Global Medicines Program. “There are so many career paths for our graduates. It’s more important than ever that they understand the global marketplace,” notes Stergachis.

“I feel very fortunate to be selected as the director of PORPP. I think so highly of the PORPP faculty and students. We are primed to make excellent strides in the coming years in the field, including and beyond pharmaceuticals. I am excited to work with the faculty and students and see what we can do together in the next five to ten years.”—Anirban Basu

PORPP: THROUGH THE EYES OF A POST-DOC

As early as 1999, PORPP had established a great reputation and Beth Devine sought a post-doc opportunity in the program. “I was drawn to the opportunity to work with Sean and Andy at UW and Lou [Garrison] who was then at Roche. The coursework of biostatistics, epidemiology, decision analysis, and health policy was exactly what I was looking for as a next step in my career.”

As with many PORPP students and post-docs, Beth benefited from the program’s outreach to industry, obtaining a fellowship that included a year of coursework and a year of applied research at Roche Pharmaceuticals. She studied the cost-effectiveness of interferon-ribavirin for the treatment of hepatitis C; completed a study of patients to elicit their preferences for diabetic neuropathy, and completed several systematic reviews that summarized the psychometric properties of patient-reported outcome instruments to assess treatment outcomes for a variety of disease states, including depression and sleep apnea.

Devine had such a positive experience as a post-doc that she wanted to return as a faculty member. “The program has grown in many ways,” she notes. “We have hired additional faculty. Our students continue to be shining stars, our projects are varied and interesting, and we have superb collaborations with colleagues both inside and external to the UW.”
PAST ALUMNI
WHERE THEY ARE NOW

CLASS OF 1998

David Smith, RPh, MHA, PhD
Senior Investigator
Center for Health Research
Kaiser Permanente
Portland, OR

CLASS OF 2001

Nathorn Chaiyakunapruk, PharmD, PhD
Professor of Health Economics
School of Pharmacy
Monash University Malaysia, Malaysia

Mitchell Higashi, MBA, PhD
Chief Economist
GE Healthcare
Milwaukee, WI

Todd Lee, PharmD, PhD
Associate Professor & Co-Director, Center of
Pharmacoepidemiology & Pharmacoeconomics Research
Department of Pharmacy Systems, Outcomes & Policy
University of Illinois, Chicago

Holly Trautman, PharmD, MS
Chief Operating Officer
Aventine Consulting, LLC
Boston, MA

CLASS OF 2002

Denise Boudreau, MPH, PhD
Senior Scientific Investigator
Group Health Research Institute
Affiliate Professor, Department of Pharmacy
University of Washington
Seattle, WA

Christopher Flowers, MD, MS
Associate Professor, Department of Hematology
& Medical Oncology
Director, Lymphoma Program, Winship Cancer Institute
Emory University
Atlanta, GA

CLASS OF 2003

Brian Custer, MPH, PhD
Investigator
Blood Systems Research Institute
San Francisco, CA

Nina Hill (Oestreicher), PhD
Executive Director, Health Economics & Outcomes Research
Relypsa
San Francisco, CA

Kristin Marciante, PhD
Tacoma, WA

Karen Smith, MS, PhD
Associate Professor of Pharmacy Practice
School of Pharmacy
Regis University
Denver, CO
PAST ALUMNI  Continued

CLASS OF 2004

Dana Hurley, PharmD, MS
Dana Hurley Consulting
Biotechnology & Health Economics & Outcomes Research Consultant
Seattle, WA

CLASS OF 2005

Scott Strassels, PharmD, PhD
Manager, Health Economics & Outcomes Research
Mallinckrodt Pharmaceuticals
St. Louis, MO

CLASS OF 2007

Jennie Best, PhD
Principal Health Economist
Genentech
San Diego, CA

Ronald Caldwell, Jr., MS, PhD
Lecturer III, Department of Economics
University of Michigan
Ann Arbor, MI

Jonathan Campbell, PhD
Assistant Professor, Health Sciences Center
University of Colorado
Denver, CO

Matthew Kerrigan, PhD
Principal Scientist
PHMR Associates
Slovenia

Sarika Ogale, PhD
Principal Health Economist
Genentech
San Francisco, CA

CLASS OF 2008

Lisa Meckley, PhD
Associate Director, Health Economics & Outcomes Research
Baxalta
Boston, MA

CLASS OF 2009

Deborah Atherly, RPh, MPH, PhD
Senior Health Economist & Policy Officer
PATH
Seattle, WA

Jamie Cross, PhD
Director, Regulatory Affairs
Medivation
Senior Regulatory Program Director
Genentech
San Francisco, CA

Eldon Spackman, PhD
Research Fellow, Centre for Health Economics
University of York
York, United Kingdom

Jelena Zurovac, MS, PhD
Health Researcher, Economist
Mathematica Policy Research
New York, NY

CLASS OF 2010

Joseph Babigumira, MBChB, PhD
Assistant Professor, Global Health
Adjunct Assistant Professor, Pharmacy
University of Washington
Seattle, WA
“PORPP has taken a broad and growing field and given me a family within it. That family really came through for me when I was in need, and I hope to be able to carry on that tradition.”

Christopher Wallick, PharmD, MS, 2013

**Lisa Bloudek, PharmD, MS**  
Assistant Director, Global Health Economics  
Xcenda  
Seattle, WA

**Patrick Gillard, PharmD, MS**  
Global HEOR Director, Infectious Disease  
Allergan  
Irvine, CA

**Bernardo Goulart, MD, MS**  
Acting Instructor/Affiliate Investigator  
Fred Hutchinson Cancer Research Center  
Seattle, WA

**Catherine Waweru, PhD**  
Senior Manager  
Medtronic  
Minneapolis, MN

**CLASS OF 2012**

**Mindy Cheng, PhD**  
Senior Manager, Global HEOR  
Abbott Vascular  
Santa Clara, CA

**Ryan Hansen, PharmD, PhD**  
Research Assistant Professor  
Department of Pharmacy  
University of Washington  
Seattle, WA

**Hiеп Nguyen, MPH, MS**  
Director, HEOR  
AstraZeneca  
Philadelphia, PA

**Joshua Roth, MHA, PhD**  
Assistant Member  
Fred Hutchinson Cancer Research Center  
Affiliate Assistant Professor  
University of Washington  
Seattle, WA

**Joanna Sanderson, PharmD, MS**  
Independent Consultant, Pharmacoeconomics & Outcomes Research  
Seattle, WA

**Veena Shankaran, MD, MS**  
Assistant Professor  
Medical Oncology  
School of Medicine  
University of Washington  
Seattle, WA

**Jonathan Watanabe, PharmD, MS, (2008), PhD**  
Assistant Professor, Skaggs School of Pharmacy  
University of California San Diego  
San Diego, CA
CLASS OF 2013

**Heidi Wirtz,** PharmD, PhD  
Manager, Center for Observational Research  
Amgen  
Seattle, WA

**Rafael Alfonso,** MD, PhD  
Director, Value Evidence Analytics  
GlaxoSmithKline  
Philadelphia, PA

**Sara Forrester,** PharmD, MS  
Utilization Management Coordinator  
Group Health Cooperative  
Seattle, WA

**Zsolt Hepp,** PharmD, MS  
Manager, Global Health Economics & Outcomes Research  
Allergan  
Irvine, CA

**Nita Khandelwal,** MD, MS  
Acting Assistant Professor  
Anesthesiology & Pain Medicine  
School of Medicine  
University of Washington  
Seattle, WA

**Christopher Wallick,** PharmD, MS  
Manager, HEOR  
Avanir Pharmaceuticals  
Costa Mesa, CA

CLASS OF 2014

**Preeti Bajaj,** PhD  
Health Economist, BioOncology  
Genentech  
San Francisco, CA

**Carlos Gallego,** MD, MS  
Acting Instructor, Medical Genetics  
School of Medicine  
University of Washington  
Seattle, WA

**Katharine Gries,** PharmD, MS (2009), PhD  
Senior Research Associate  
Evidera  
Seattle, WA

**Norio Kasahara,** MPH, PhD  
Deputy Chief of Party  
Management Sciences for Health  
Kabul, Afghanistan

**Tracy Yep,** PharmD, MS  
UW/Allergan Post-Doctoral Fellow  
Allergan  
Irvine, CA

“The more I progress in my career the more grateful I become for the strong training I received at PORPP, with just the right combination of rigor and pragmatism. I feel like I am standing on the shoulders of giants, not only because of this unique training but also for the very strong network among PORPP folks.”

Nina Hill, PhD, 2004
Our Present

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   RYAN HANSEN, PHARMD, PHD

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OUR MISSION

» CONDUCT RESEARCH ON THE EFFECTS AND USES OF PHARMACEUTICALS IN HUMAN POPULATIONS

» PROVIDE GRADUATE AND POSTGRADUATE TRAINING IN PHARMACEUTICAL OUTCOMES RESEARCH AND POLICY

» DISSEminate TIMELY INFORMATION REGARDING PHARMACEUTICAL OUTCOMES RESEARCH AND POLICIES TO GOVERNMENT, THE PHARMACEUTICAL INDUSTRY, HEALTH CARE PROVIDERS, AND THE GENERAL PUBLIC

» INFORM, THROUGH RESEARCH AND SCHOLARSHIP, REGIONAL AND NATIONAL POLICIES GOVERNING PHARMACEUTICALS AND PHARMACEUTICAL SERVICES

» BE CONSIDERED A RESOURCE FOR INDUSTRY RESEARCH, CONSULTATION, AND TRAINING PARTNERSHIPS
Dissertations don’t typically make the evening news. Unless you are PORPP alumnus and Research Assistant Professor Ryan Hansen whose study on the impact of sleeping aids on motor vehicle accidents was published in the American Journal of Public Health in June and were featured in an NBC Nightly News broadcast.

The study grew out of a conversation with a family friend when Hansen was seeking a dissertation topic some years ago. The friend said that he had taken a sleep aid the night before, woke up in the kitchen, and noticed a bite was taken from a piece of raw pork in the fridge.

“As a pharmacist and a researcher, that had me wondering about the affect these sleep aids have and how we might measure their impact.” He identified a way to link motor vehicle crash records with prescription drug data and identified a trend among people who had new sleep-aid prescriptions for these three drugs.

Three prescription sleeping aids are associated with an increase in motor vehicle crashes, according to his research in collaboration the Group Health Research Institute. They found the risk of motor vehicle crashes was nearly double among new users of the medications temazepam (Restoril), zolpidem (Ambien, Ambien CR) and trazodone (Desyrel).

Study participants met the following criteria: had a drug benefit through Group Health Cooperative; were between 21 and 79 years old; were Washington state residents; and had Washington state driving licenses.

The population’s medical encounters and prescription records were combined with Washington state driver’s license records and motor vehicle crash records.

For new users of all three prescriptions, exposure nearly doubled the risk of vehicle crashes. For new users, the increased risk could last for up to one year of continuous prescription-filling. Among the three drugs analyzed, temazepam appeared to offer the least risk for motor vehicle crashes, but may have other associated risks for some patients.

“Depending on an individual’s need to drive regularly, combined with a medical indication for sedative use, the choice of a particular sedative may affect the risk of crashing,” the scientists wrote. “Prescribers, pharmacists and patients should discuss this potential risk and consider the implications of this analysis when selecting a sedative hypnotic medication.”

“There are many approaches to the management of insomnia, including lifestyle changes such as cutting caffeine intake and exercising, which may alleviate the insomnia without medications,” Hansen said. “There’s a public safety concern that we want health providers and the general public to be aware of.”

The team emphasized the need for additional research to evaluate the risks and associations between overall medication use and traffic crashes. Noted Hansen: “People with questions or concerns about a new sleep aid prescription should talk with their physician, pharmacist, or health provider to understand the risks.”
PHD IN PHARMACEUTICAL SCIENCES

The University of Washington created the Pharmaceutical Outcomes Research and Policy Program (PORPP) in 1995 to strengthen research efforts and provide graduate-level training in the outcomes research and policy areas.

Pharmaceutical outcomes research employs a variety of methods to evaluate the impact of healthcare interventions on clinical outcomes, patient quality of life, cost-effectiveness and assessment of healthcare policy implications. The graduate program in pharmaceutical outcomes research and policy trains students in economic evaluation, pharmacoepidemiology, health services and policy research and health technology.

Graduate training in the program prepares students for career opportunities in:

- Academic research and teaching
- Safety and economic evaluation of products in the pharmaceutical, biotechnology and medical device industries
- Policy analysis for professional associations, health care insurance providers, and governmental agencies
- Management within hospitals, managed care organizations and programs concerned with reimbursement for pharmaceuticals and other medical technologies

PHARMD/MS CONCURRENT DEGREE

The Department of Pharmacy offers a combined PharmD-M.S. program in Pharmaceutical Outcomes Research and Policy. This program is targeted towards outstanding students currently enrolled in the School of Pharmacy’s PharmD program who have a proven interest in the field of Outcomes Research and Policy.

The concurrent degree program allows students enrolled in the School of Pharmacy’s professional program to pursue a PharmD and M.S. degree, and to complete both degrees within a 5-year period. Students will complete extensive graduate coursework in 4 quarters. The program offers efficient and specialized training through research experience, and classroom training.

The demand for clinically trained students with outcomes research capabilities is high in academic, industry, and government settings and continues to grow. The PharmD-M.S. program was created to meet this demand.

FELLOWSHIPS

The University of Washington/Allergan Fellowship and the University of Washington/Bayer Fellowship in Pharmaceutical Outcomes Research and Policy combines the resources of a leading academic center for pharmaceutical economics and policy with the dynamic, real-world training of two major pharmaceutical companies recognized for their commitment to innovation.

Postdoctoral fellowship students work closely with Program faculty on projects where they learn first-hand how to apply the principles of outcomes research to real-life problems. These fellowships provide students with a year of study at the University of Washington, leading to a master’s degree, combined with a period of applied research at the sponsoring company.
The Certificate in Health Economics and Outcomes Research program is entering its 4th year. Launched at the start of the 2012-2013 academic year in conjunction with the UW Professional and Continuing Education program, this distance learning program is designed for professionals working in health care settings including payer organizations, health insurance industry, government, the life sciences, pharmaceutical and biomedical industries, and for professionals working within Health Technology Assessment or reimbursement organizations. The program offers one course per academic quarter--Fall quarter: Principles of Health Economics, taught by Lou Garrison and Anirban Basu; Winter quarter: Economic Evaluation, taught by Dave Veenstra and Josh Carlson; Spring quarter: Practice of HTA in a Global Environment, taught by Sean Sullivan and Beth Devine. During the program, students learn the key economic concepts and analytical tools of human economic behavior, explore the current state-of-the-art in the economic evaluation of health care technologies, and are introduced to the principles and methods of HTA practice. Students work in groups throughout the program on a capstone project, which applies their learning to an assigned country. Student evaluations have been positive. Many of the students are international, a testament to the program’s global reach.

In the second year of the program, applications were at 75+ and in the third year applications were at 90+. The 2015-2016 program is on target to reach similar numbers. The program now has an active LinkedIn alumni group. Courses are continually being updated and revised to keep pace with changing technologies and economies. Revenues from the Certificate in Health Economics and Outcomes Research program support 1-2 PORPP teaching assistant positions each year.

http://www.pce.uw.edu/certificates/health-economics.html for additional information.

“Joining PORPP was a life-changing experience and dream come true for me. By interacting with some world-renowned health outcomes researchers, I learnt to think analytically and seek creative ways to tackle real-life problems. These are learnings that I continue to apply to this day.”

Catherine Waweru, PhD, 2010
Led by Beth Devine, Lou Garrison, and Anirban Basu, the UW has now completed the third year of the UW Center of Excellence in Comparative Effectiveness Research (CER), the cornerstone of which is the Graduate Certificate in CER. The UW Center of Excellence in CER is one of the first two (along with Hopkins) of six academic centers across the US that received support from the Pharmaceutical Research and Manufacturer’s Association (PhRMA) Foundation through a competitive request for proposals offered between 2011 and 2014.

The UW Certificate is open to currently enrolled PhD and MS students in PORPP and Health Services. Coursework beyond the core work required for each degree prepares enrolled students to conduct projects that use advanced skills in observational data analysis and decision sciences, preference (utility) estimation from patient reported outcomes data, network meta-analysis, and Bayesian statistics. To date, ten students have registered to complete the Certificate. Three of these have been supported by the formal research assistantships; an additional five have each received a $10,000 dissertation stipend. See http://sop.washington.edu/department-of-pharmacy/pharmaceutical-outcomes-research-policy-program-porpp/certificate-programs/ for additional information. We are grateful to the PhRMA Foundation for their support in training our students.

The UW Center for Excellence in CER has led to two new initiatives, now underway: 1) a stakeholder-driven educational and experiential training program to prepare scientists and clinicians to conduct CER/PCOR in the WWAMI (Washington, Wyoming, Alaska, Montana, Idaho) region, with a focus on American Indians and Alaska Natives, and 2) a certificate program in Translational Sciences. The first is supported by a grant from AHRQ, with Larry Kessler as PI; the second is supported by the Institute of Translational Health Science (UW CTSA), with Beth Devine as Lead Faculty.

In early 2014, Beth Devine and Lou Garrison joined Jodi Segal of Johns Hopkins in leading a national invitational conference titled, “Curricular Advances for Patient-Centered CER”. 120 attendees representing 50 academic institutions, the life sciences industries, the Federal government, professional organizations and health plans discussed approaches used to prepare a workforce skilled in CER and patient centered outcomes research (PCOR). The conference was supported by grants from AHRQ, PCORI, and the PhRMA Foundation.

In early 2015, the PhRMA Foundation engaged Avalere Health LLC to conduct a program evaluation of the CER initiative. Report findings indicate the initiative has accomplished the original objectives in providing seed funds for academic training programs for CER. The report recommends that the PhRMA Foundation conduct a follow up conference that would be co-sponsored by AHRQ and PCORI, as well make use of webinars and other innovative teaching platforms to advance educational efforts for healthcare professionals and other ‘users’ of CER. As a member of the PhRMA Foundation’s CER Advisory Committee, Beth will participate in these activities.
The 3-quarter certificate program in Biomedical Regulatory Affairs was developed at the request of local industry and launched in September 1998. Its core curriculum seeks to develop an understanding of regulatory process for biologics, drugs and medical devices; a Clinical Trials Certificate followed in 2000. Both programs have enjoyed generous support from industry, the US Food and Drug Administration, and colleagues in the School of Law and the College of Engineering. UW Professional & Continuing Education has been an invaluable partner. Through spring 2015, 331 students have completed the Biomedical Regulatory Affairs certificate and 385 have completed the Clinical Trials certificate.

Throughout the early years of the Biomedical Regulatory Affairs Certificate program, students asked when an advanced degree would be available. The Biomedical Regulatory Affairs Master of Science (BRAMS) Degree program launched in 2008. The BRAMS advisory committee mandated that the curriculum stress communication skills and include a practicum. The current curriculum includes the courses of both certificate series: a two-course technical writing series; as well as courses in international regulatory affairs, regulatory data essentials and analysis, medical risk analysis and management, regulatory affairs skills, and a 9-credit practicum. http://www.regulatoryaffairs.uw.edu/

In concert with other higher education institutions, BRAMS faculty have been active in the development of a professional organization, the Association of Graduate Regulatory Educators (AGRE), incorporated in 2014. AGRE provides a forum for the ~40 graduate programs in regulatory affairs, in the US and abroad, to discuss issues of common concern and share best practices for regulatory education. As an early step, AGRE members developed and have published a set of core competencies expected for graduates of MS programs in regulatory affairs and regulatory science. Initial analysis shows that the BRAMS curriculum covers the core competencies well.

Our students are educated about regulatory issues for drugs, devices, and biologics. Training focuses primarily on the US regulatory system but considerable content is included on international regulatory systems. The practicum gives them real-world experience doing a regulatory project at a company, institution or non-profit organization. About 140 students have enrolled in the BRAMS program and we expect our 100th graduate early in 2016. Graduates of the BRAMS program are well-rounded regulatory professionals who are able to contribute in multiple elements of product development for national and international markets. They are employed throughout the US and abroad (Canada, India, China, and Taiwan) in pharmaceutical, biologic, and medical device companies, and in universities, blood banks, regulatory agencies, and other non-profit organizations. They have both leadership and supporting roles in pre-clinical and clinical research, quality, regulatory affairs, and communications.
The Pacific Northwest (PNW) Evidence-based Practice Center (EPC) develops evidence reports and technology assessments of health care topics for federal agencies and state agencies, professional associations, foundations, and the US Preventive Services Task Force. These reviews report the evidence from clinical research studies and rate the quality of that evidence for use by clinicians, employers, policymakers, researchers, and others in decision-making capacities about the provision of health care services and health research. Reports may be used to inform the development of clinical practice guidelines, or to inform reimbursement and coverage policies. The PNW EPC is one of 13 EPCs sponsored by the Agency for Healthcare Research and Quality (AHRQ), as part of the Effective Healthcare Program. First started in 1997, the AHRQ EPC Program is now in its fifth, 5-year cycle, continuing the work of previous EPCs. For more information about the AHRQ EPC program, visit http://www.ahrq.gov/research/ findings/evidence-based-reports/overview/.

The PNW EPC is a partnership between Oregon Health Science University, the University of Washington CHASE Alliance (of which PORPP is a participating program), and Spectrum Research, Inc., of Tacoma, WA. Beth Devine, Associate Professor in PORPP, and John Gore, Associate Professor of Urology, are the UW site co-principal investigators of the PNW EPC, and lead the projects based at UW. Collectively, investigators with the PNW EPC have a particular interest in leading health technology assessments of diagnostic technologies, prevention effectiveness, evidence-based informatics, research in managed care, and critical appraisal of cost-effectiveness analysis and decision analysis. In the past three years, PORPP faculty and staff have lead or participated in 8 unique EPC projects. For more information about the PNW EPC, visit http://www.ohsu.edu/xd/research/centers-institutes/evidence-based-practice-center/.

To produce reports and technology assessments, investigators and staff of the Pacific Northwest EPC review all relevant scientific literature on the clinical, behavioral, and organization and financing topics awarded under contract by AHRQ. These reports are completed using rigorous, comprehensive syntheses and analyses of the relevant scientific literature. EPC reports emphasize explicit and detailed documentation of methods, rationale, and assumptions. These scientific syntheses may include meta-analyses and cost analyses. All EPCs collaborate with other medical and research organizations so that a broad range of experts is included in the development process. In addition, the EPCs: 1) provide technical assistance to professional organizations, employers, providers, and policymakers to facilitate translation of the reports into quality improvement tools, evidence-based curricula, and reimbursement policies; 2) undertake methods research; and 3) update prior evidence reports.

Each completed report is published on the AHRQ EPC website, and is simultaneously published in a high-impact medical journal, often the Annals of Internal Medicine. Since joining the Pacific Northwest EPC, investigators in the UW CHASE Alliance have led and participated in the following EPC projects.


Eden KB, Totten AM, Kassakian SZ, Gorman PN, McDonagh MS, Devine B, Pappas M, Daeges M, Woods S, Hersh WR. Barriers and facilitators to exchanging health information: a systematic review of usability. (under review at Int J Med Inform)


7) IMPROVING HEALTH SYSTEMS—no publications

8) NONINVASIVE TREATMENT FOR LOW BACK PAIN—still active
How do we optimize public investments in health research?
In a health care system with limited resources, it is vital to identify research areas with the greatest likelihood of influencing clinical practice and improving patient outcomes. Value-of-information (VOI) analysis is a quantitative approach to inform research prioritization that has received increased attention, particularly within the context of comparative effectiveness research.

VOI analysis involves the application of methods from economics and statistical decision theory in decision analysis to estimate the humanistic and economic value of performing additional research to better understand the safety, efficacy, and cost of technologies and medical interventions. These analyses quantify how research will produce information that may change clinical decision-making and how changes in clinical decision-making improve patient outcomes. Several factors are considered – how much and when knowledge will be generated, who will be impacted by this knowledge and to what extent this knowledge will translate to better decision-making.

Investigators in PORPP have established a robust research program at the forefront of this innovative area of research. Through a series of high-profile related projects we have developed new methodologies, developed processes for engaging with and educating key healthcare stakeholders, and applied these methods and processes to real-world decision making at the national level. Below we highlight the projects in more detail and provide a summary of our findings to date and future directions.

**CANCER GENOMICS (RAMSEY, VEESTRA, CARLSON).**
Our first project in the area of research prioritization using VOI was the Center for Comparative Effectiveness Research in Cancer Genomics (CANCERGEN), an NIH funded project with the objective of identifying promising genomic technologies in the treatment of cancer, prioritize further research, and facilitate their evaluation in clinical trials through a collaborative stakeholder driven process. This project was developed and performed with the Fred Hutchinson Cancer Research Center (FHCRC), the Center for Medical Technology and Policy (CMPT) and SWOG (formerly the Southwest Oncology Group), a large cancer clinical trials cooperative group. The primary responsibility of the UW team (led by Dr. Veenstra) was VOI model development and impact evaluation. This was the first project to directly link VOI analyses to decision-making processes in the U.S. and informed clinical trial recommendations and trial designs within SWOG. This formative work allowed our group to develop approaches for educating stakeholders about VOI, advance methods for VOI modeling in real world situations, and resulted in 8 published manuscripts—setting the stage for additional work and grants. However, there were a number of challenges that arose, including the resource intensity required and time investment needed to build and present VOI models to the stakeholder group.

**CANCER CLINICAL TRIALS (RAMSEY, CARLSON, VEESTRA, BASU).**
Working with the same group of collaborators as in CANCERGEN, we are advancing applied VOI as part of a PCORI funded project, ‘A Structured Approach to Prioritizing Cancer Research Using Stakeholders and Value of Information.’ This 3-year project was launched in Sept. 2013 with the objective to evaluate the impact of VOI analyses on SWOG’s clinical trial prioritization processes. This methodology-focused project intersects stakeholder engagement, VOI, and minimal modeling to inform research prioritization. The addition of minimal modeling, a concept previously developed by Basu and colleagues, enables the rapid VOI modeling efforts necessary to allow real-time VOI analysis within SWOG. The UW team, led by Dr. Carlson, is generating VOI estimates for proposed SWOG trials in real-time, and evaluating the impact of the VOI estimates on SWOG decision-making within SWOG’s Executive Committee. Thus far, we have completed the educational and minimal modeling VOI development.
phases of the project and are currently in the prospective VOI evaluation phase. Our preliminary findings indicate that our process is efficient, feasible, and acceptable to SWOG members.

**PERSONALIZED MEDICINE (VEENSTRA, CARLSON, BASU).**
In response to an NIH funding opportunity announcement, we developed a comprehensive proposal to advance our work in precision medicine and research prioritization. The aims of our grant are to 1) Expand the concept of the expected value of individualized care (EVIC) to represent an encompassing economic model for prioritizing PM research and evaluating specific PM technologies, 2) Assess societal, provider, and payer preferences for PM, including personal utility and willingness to pay, to inform the EVIC model, and 3) Develop a pragmatic decision framework to address evidence uncertainty in PM and inform clinical guideline and reimbursement policies. This 5-year grant was launched in the fall of 2013 and will have key contributions to the advancement of value of information applications and research prioritization. Advancing the EVIC framework will allow researchers to prioritize many facets of the individualization process including – 1) research investments in developing personalized biomarkers, 2) identification of factors leading to uptake on these personalized biomarkers and 3) evaluation of these biomarkers in practice. Further, aim 3 will assess the value of future research for personalized medicine (PM) case studies and develop a pragmatic framework to help decision makers assess ‘insufficient’ vs. ‘sufficient’ evidence in the development of clinical guidelines and reimbursement policies.

**CARDIOVASCULAR CLINICAL TRIALS (BASU, CARLSON, VEENSTRA).**
Most recently, we received a grant from the National Heart, Lung, & Blood Institute, ‘Value Of Information Methods For NHLBI Trials,’ to develop a comprehensive toolkit of pragmatic VOI approaches and the corresponding software that can readily be used by clinical researchers and NHLBI to estimate the *a priori* value of RCTs.

This 4-year grant, launched in the spring of 2015, has the following 4 aims: 1) To assess the feasibility of conducting minimal modeling VOI calculations in the context of NHLBI trials, 2) To develop a comprehensive toolkit of minimal modeling VOI methods for specific questions about an RCT based on a return-on-investment framework, 3) To demonstrate the use of the checklist and toolkit developed in Aims 1 and 2, and 4) To develop user friendly web-based software as a proof-of-concept to perform these calculations for an RCT based on inputs received from NHLBI stakeholders. This work builds directly off of our formative work and will be the first example of VOI being applied within a federal funding agency.

PORPP and our collaborators are at the forefront of VOI methods development and real-world application to inform research prioritization. We believe that while challenges remain, VOI is feasible, acceptable to key decision-making stakeholders, and can impact clinical research prioritization decisions. Our research group within PORPP and in collaboration with our partner institutions will continue this promising line of research, pushing the development of new methods and pioneering the application of VOI to inform real-world decision making. Extending these methods to the commercial side of research investments, throughout a product lifecycle, is also an active area of our research portfolio. The ultimate purpose of medical research is to improve the lives of patients. We hope that our work will further this goal by allowing research groups and funders to design and select research studies that maximize the importance and impact of research investments on the health outcomes of individuals and populations.
In 1993, the U.S. Public Health Service convened a panel of 13 non-government scientists and scholars to review the developing field of cost-effectiveness analysis. In 1996 the panel published a book that summarized the state of the field and provided recommendations for the use and conduct of cost-effectiveness analyses in health and medicine. Popularly known as the “Gold book”, this report quickly became a standard reference both in the United States and internationally and has been cited more than 6,000 times. Originally thought to have a life expectancy of 10 years, this report has continued to inform and shape training for future generations of researchers over the last 20 years.

However, several events occurred since the publication of this report in 1996. In 1998, The World Health Organization established the WHO-CHOICE project where teams work with policy makers at the country level, providing information on cost-effectiveness, costs and strategic planning which can help guide policy decisions. In 1999, the National Institute of Clinical Excellence (NICE) was established in the UK. In 2004, the Institute for Quality and Efficiency in Health Care (IQWiG) was established in Germany, and the Haute Autorité de santé (HAS) in France. In 2008, the Advisory Committee on Immunization Practice (ACIP) established guidelines for the Center for Disease Control in the US. In 2010, the Affordable Care Act was passed in the US that explicitly prohibits the newly created Patient-centered Outcomes Research Institute (PCORI) to develop cost per QALY thresholds. In 2014, the Gates reference case for economic evaluation was published.

In light of the substantial developments of the theory, and methods around economic evaluations and especially cost-effectiveness analysis, a second panel on cost-effectiveness analysis was convened in 2013 by a mix of leaders in the field, which includes members of the original Panel (Ted Ganiats, Joanna Siegel and Louise Russell) and also new members (Peter Neumann and Gillian Sanders). This leadership group put together a team of experts to review all facets of cost-effectiveness theory and methods and to develop a report updating the original panel’s work. The panel members have been meeting over the last two years to debate and discuss many issues that relate to the development and application of CEA methods. Further details on this panel can be found at http://2ndcep.hsrc.ucsd.edu/

Anirban Basu serves as a panelist in this group and is leading the chapters on costs and discounting. He is also a co-author on the chapters on theoretical foundations and uncertainty. Chapters will be available for public review later this year on the panel website. Expected publication of the final report is Spring 2016.
UNIVERSITY OF WASHINGTON SCHOOL OF PHARMACY

ACADEMIC PARTNERSHIPS

CAB HISTORY

The UW School of Pharmacy Corporate Advisory Board (CAB) first met 17 years ago, in 1998, to identify areas of common interest between PORPP and corporate members of the pharmaceutical, biotech, and device industry. In November 2001, the CAB was reconvened, and eleven colleagues from industry met with PORPP faculty for a day of brainstorming ideas to enhance an already strong partnership, with the goal of strengthening the PORPP program to meet the needs of colleagues in the pharmaceutical industry. Our mutually identified goals were to: 1) Train researchers who understand the perspective of, and are prepared to function at a high level within industry; 2) Increase the number of PORPP graduates to fill available positions in industry; 3) Develop the ability to respond to emerging industry research needs, both in terms of expertise of our graduates, and in terms of faculty to conduct research in emerging areas; and 4) Train those currently employed in the industry setting in the concepts of pharmacoeconomics and outcomes research.

Held annually since 2001, the CAB meeting is now an integral part of PORPP activities and is an event that is much anticipated. The morning of each CAB meeting is structured to:

- Provide our corporate partners an update on activities and accomplishments of the PORPP faculty, students and post-doctoral fellows;
- Highlight new research programs, accomplishments, and academic offerings.
- The afternoon session provides a more informal opportunity for:
  - Discussion between PORPP faculty and corporate colleagues to assess progress in areas of common endeavor;
  - Identify ongoing gaps in reaching common goals;
  - Celebrate mutual successes.

The student poster session, held during the end-of-day wine reception provides an opportunity for our corporate colleagues to appreciate how their generous contributions to our graduate program are preparing PORPP students to become industry-employed scientists of the highest caliber.

A review of the minutes of the 2002 CAB meeting suggest that PORPP faculty were already making progress in achieving the four goals outlined in 2001. Over time, our goals have remained largely the same, modified to fit rapidly evolving times. A graduate seminar was instituted; themed quarterly and held weekly. Since then, presentations and discussion of myriad topics suggested by CAB have been presented – from enhancing business communications to strategic planning, from global health to drug safety. Collaborative PORPP/industry pre- and post-doctoral fellowships were established, as were opportunities for students to complete summer internships in industry. Several important training programs and research projects have also resulted from our strategic partnership with our corporate colleagues – many under the umbrella of the Health Tech Fund. These activities include the:

- Creation of a global database in which facts are recorded about risk-sharing agreements;
- Evaluation of the impact of health economics and outcomes research;
- Evaluation of a value-based insurance design at the payer level;
- Development of an online certificate program in health economics and outcomes research;
- Assessment of the value of a cure.

For the 2014 CAB meeting, PORPP hosted 26 corporate colleagues, a true reflection of the growth of our partnership over time. We look forward to the continued successes of this important component of PORPP.
The UW Centers for Comparative and Health Systems Effectiveness (UW CHASE Alliance) was developed to facilitate multidisciplinary, high impact comparative and systems effectiveness research and implementation. The CHASE Alliance consists of UW researchers and community partners interested in comparative effectiveness research, health disparities, health system evaluation, technology assessment, patient-centered outcomes, economic evaluation, and dissemination and translation. The mission of the UW CHASE Alliance is to provide the multidisciplinary, collaborative environment required for the successful conduct and implementation of comparative effectiveness research in today’s and tomorrow’s complex health care system.

The graduate programs of PORPP support the objectives of the CHASE Alliance. The programs cross the major health science divisions of the UW, representing nationally and internationally recognized academic programs in Pharmacy, Public Health, and Medicine. All of the degrees and certificates consist of cohesive training through completion of didactic course offerings and participation in pragmatic research and implementation opportunities in ongoing, funded projects with the UW and our partnership organizations. It also involves participation with stakeholders in real-world settings. Our CHASE partnership institutions include the Fred Hutchinson Cancer Research Center, Group Health Research Institute, and the VA Puget Sound Health Care System.

The leadership of the CHASE Alliance includes six faculty members who hold appointments within the Department of Pharmacy – PORPP division.

“I have been grateful to be a family member of PORPP. My experience with PORPP has been wonderful. It strongly influences not only my career development but also my life and what I have become myself today. I am pleased to see the success of PORPP on this 20th year anniversary.”

Nui Nathorn Chaiyakunapruk PharmD, PhD, 2001
Blythe Adamson, MPH

Blythe progressed through the core PORPP curriculum in her first year supported by an NRSA T32 fellowship from the Agency for Healthcare Research and Quality. Under the mentorship of Dr. Lou Garrison, Blythe continues to unpack static and dynamic model choices for economic analyses of infectious diseases. She presented posters on the cost-effectiveness of HIV vaccines at the Western Pharmacoeconomics Conference in Denver and International Society for Pharmacoeconomics and Outcomes Research Meeting in Philadelphia. After passing the preliminary exams, Blythe was supported by funding from the Center for AIDS Research to attend a three-week Summer Institute in Statistics and Mathematical Modeling of Infectious Diseases.

Maria Agapova, MSc, PhD Candidate

Maria is completing work on her dissertation project, A Benefit-Harm Assessment Framework for Development of Clinical Guidelines in Diagnostic Radiology. She presented this work to the Department of Pharmacy Corporate Advisory Board last fall. This summer, Maria lead the Department’s first multi-criteria decision analysis with a group of Emergency Department physicians and radiologists. Maria also led to publication in Expert Reviews of Pharmacoeconomics and Outcomes Research, a cost-analysis for the Irish National Screening Service of two testing schedules for cervical cancer surveillance. In the very near future, Maria looks forward to transitioning to the workforce where she can be actively involved in healthcare policy implementation while gaining pragmatic experience in decision analysis for policy development.

Mark Bounthavong, PharmD, MS

Mark is in his second year of the Agency for Healthcare Research and Quality T32 predoctoral trainee grant. Mark has been working with Drs. David Veenstra and Beth Devine on performing a network meta-analysis and cost-utility analysis for FDA-approved biologics in moderate-to-severe Crohn’s disease. He presented his research at the Western Pharmacoeconomics and Outcomes Research Conference (WPC) and at the International Society
Mark Adams, BSc, MS, PhD

For Pharmacoeconomics and Outcomes Research. At the WPC, he received the best podium presentation award. He also shared the annual PORPP prize (with Vanessa Shih) for his work on evaluating the cost-effectiveness of biologics in Crohn’s disease. In the past year, Mark evaluated the cost-of-illness of Crohn’s disease in the US population, which he presented at the National Research Service Award meeting. He is currently working on his dissertation topic that focuses on the economic and clinical outcomes of the herpes zoster virus vaccine in the Department of Veterans Affairs.

Will Canestaro, MS, PhD Candidate

Will is entering his fourth year of the PhD program and has recently passed his general exam and moved on to candidate status. The focus of his research will be developing methods to estimate societal economic loss from publication bias. Will has also spent the past year serving as the research assistant for the federally-funded PriMER study, for which Drs. Carlson and Veenstra are both principal investigators. Will will be completing his dissertation research with support from competitive grants from the PhRMA Foundation and American Foundation for Pharmaceutical Education.

Devender Dhanda, BSPharm, MS, MBA

Devender will be entering his third year of the PhD program in PORPP. By the end of the second year, Devender completed his required coursework and passed all four prelims required by the program. During the second year, he worked with Dr. Dave Veenstra on the Personalized Medicine Economics Research (PRiMER) grant. Devender worked on evidence comparison between the pharmacogenomics-based and clinical decisions based on drug-drug interactions by running value of information analysis (VOI) of the warfarin amiodarone drug-drug interaction and pharmacogenomics based warfarin dosing. Devender also worked on the Bayesian Meta-analysis of Safety Endpoints of the Novel Anticoagulants (NOACs) and a Systematic Review of Disease Specific Patient Reported Outcomes in Atrial Fibrillation with Dr. Beth Devine. During his third year, Devender is exploring dissertation topics for his PhD dissertation and plans on submitting the short proposal by end of winter quarter.

Simrun (Simi) Grewal, MHS

During her first year in the PhD program, Simi enjoyed opportunities working with faculty on various topics including international financing for non-communicable diseases and evolving health technology assessment processes in middle income countries. Over the summer, Simi gave an oral presentation of her research using a discrete choice
experiment to explore health insurance preferences at the International Health Economics Association (iHEA) Congress in Milan. She also completed an internship in Health Economics and Outcomes Research with a focus on oncology at Genentech in San Francisco. Her work on national immunization program costing was published in Vaccine. Entering her second year, Simi is excited to continue learning about personalized medicine and stated preferences research methods as an RA on the Personalized Medicine Economics Research (PRiMER) project.

**Katelyn Keyloun, PharmD, Allergan Post-Doctoral Fellow 2014-2016**

Katelyn is a Washington State pharmacist (Graduated from University of Washington, June 2014) coming to the Fellowship program with a background in parasitology research. She has completed rigorous coursework through the Department of Pharmacy at UW this past year, including core coursework in epidemiology, biostatistics, and in health economics and outcomes research. Working towards earning a Master of Pharmaceutical Sciences degree, her in-progress thesis project, a retrospective analysis of US insurance claims data, is titled “Adherence Outcomes to Antidepressant Medication Therapy in Patients with Major Depressive Disorder”. She is excited to work on research projects supporting Major Depressive Disorder and other therapeutic areas for Allergan’s Global Health Outcomes Strategy and Research department.

**Richard Kim, MD, MS, PhD Candidate**

This past year, Richard successfully completed his General Examination for his Ph.D candidacy. His dissertation will look at organizational factors that are associated with favorable clinical outcomes and costs in the lung cancer diagnostic workup. He also completed a project funded by the Firland Foundation, looking at the epidemiology and treatment variation in non-tuberculous mycobacterial infection. He presented these findings at the 2015 international conference for the American Thoracic Society. This coming year, he hopes to complete his dissertation and continue to find opportunities that combine his clinical and research endeavors.

**Meng Li, MS**

Meng completed her second year in the PhD program, and successfully completed all of her required coursework. During the past year, Meng has been working with Drs. Lou Garrison and Joseph Babigumira on the economic burden of giant cell arteritis in the United States. She also worked with Dr. Ryan Hansen and surgeons from the School of Medicine on two clinical studies of liver transplant patients. She has also been working with Dr. Hansen and researchers from the UW Alcohol & Drug Abuse Institute on a project that describes opioids use in Washington state under the Prescription Monitoring Program. This summer, she is
working with Dr. Andy Stergachis on a survey of corporations and non-government organizations on their medication donation programs.

**Solomon Lubinga, BPharm, MSc**

Solomon is entering the fourth year of the PhD program in PORPP. In the past year, he continued his work with Drs. Andy Stergachis and Joseph Babigumira in the Global Medicines Program to support a human resources intervention to strengthen the supply chain of essential medicines in Malawi, and published a methods manuscript describing an impact evaluation of this project. He also worked with Dr. Brian Custer (Blood Systems Research Institute) to develop a model to estimate the cost-effectiveness and budget impact of Methylene Blue Treated Plasma compared to the Quarantine Plasma for pathogen reduction in Spain. Having successfully submitted his short proposal, he is actively preparing for his general examination. Solomon’s dissertation will explore the economic and behavioral psychological factors affecting an individual’s decision to take up medical male circumcision for HIV prevention in Uganda.

**Marita Mann, MPH, PhD Candidate**

Marita Mann has completed her third year in the PhD program. Marita’s dissertation focuses on the feasibility of a national active surveillance system for HIV medication in Namibia. She has completed two technical reports for the Ministry of Health and Social Services in Namibia which will lead to dissertation manuscripts. She also presented this work at two scientific conferences. In addition, Marita continues to work on the cost-effectiveness of cervical cancer screening in Kenya, and presented that work at the Conference for Retroviruses and Opportunistic Infections. Marita has also begun working on device landscape analyses with Boston Scientific, and will continue that and her dissertation work throughout the coming year.

**Cara McDermott, PharmD, MS, PhD Candidate**

Cara passed her general exam in December 2014 and is working with SEER-Medicare data for her dissertation, entitled “Depression, Health Care Utilization, Outcomes and Costs among Lung Cancer Patients.” She presented her capstone project for the Graduate Certificate in Comparative Effectiveness Research at the 2014 annual meeting of the Society for Medical Decision Making in a poster presentation entitled “Systematic Review and Meta-analysis of Directly Observed Therapy for Treatment of Hepatitis C”. The poster was a finalist for the Lee B. Lusted Student Prize. Cara
spent the past academic year as a teaching assistant for the Certificate in Health Economics and Outcomes Research distance learning program, a role she will continue in this upcoming year.

**Vanessa Shih, PharmD, MS, Allergan Post-Doctoral Fellow 2014–2016**

Vanessa has finished the first year of her fellowship and is excited to spend the next year on-site at Allergan in Irvine, CA. Over the past year she has been taking coursework and working on her master’s thesis titled “Assessing the burden of worsening self-reported vision in older Americans using the Health and Retirement Study.” Additionally, she presented a poster at the ISPOR 20th Annual International meeting titled “Estimating the cost-effectiveness of left atrial appendage closure compared to warfarin for stroke prevention in atrial fibrillation.” She will be working with the Global Health Economics and Outcomes Research team at Allergan in the eye care therapeutic area and is looking forward to further developing her skill set in outcomes research.

**Kangho Suh, PharmD, MS**

Kangho is entering his second year in the PhD program in PORPP. In the past year he was the TA for pharmacy students in the course Introduction to Pharmaco economics and Outcomes Research, taught by Ryan Hansen. In the summer he worked as a RA with Ryan on cost-effectiveness projects relating to multiple sclerosis treatments and therapy interventions for veterans. He also worked as a RA with Lou Garrison and Josh Carlson on a project funded by the Corporate Advisory Board assessing the value of cures. He will continue serving as the RA for the cures project for the upcoming academic year.

**Elisabeth Vodicka, MPH**

Elisabeth will be a third year PhD student in PORPP. Last year, she was an RA for Brian Bresnahan on a Gates-funded economic evaluation of portable ultrasound in low-income countries, which she will continue this year. She also completed data collection and analysis of cervical cancer screening costs in Kenya, under the mentorship of Joseph Babigumira and Lou Garrison, and published a paper with Beth Devine and Donald Patrick on the use of patient-reported outcomes in clinical trials. In early Fall, she will travel to Peru to conduct qualitative research evaluating patient preferences for using pharmacies for hypertension prevention and management, under the guidance of Andy Stergachis. She is refining her short proposal for her dissertation on policies of cervical cancer screening in low-resource settings.
Kai Yeung, PharmD, MS, PhD Candidate
Kai Yeung has completed his fourth year in the PhD program. During this academic year, Kai has worked towards the completion of his dissertation. Kai’s dissertation focuses on the evaluation of the impact of a novel value-based formulary which uses cost-effectiveness analysis to determine drug copayments. Related to this work, Kai gave a podium presentation on the “Application of Cost-Effectiveness Logic to US Managed Care Drug Formularies: Long Term Outcomes of a Value-Based Formulary” at the 20th annual international meeting of the International Society for Pharmacoeconomics and Outcomes Research. This presentation received ISPOR’s best student podium research presentation award. He delivered another oral presentation for a continuing pharmacy education session at the 27th Annual Meeting of the Academy for Managed Care Pharmacy entitled “Pharmacoeconomic Modeling: Applying Value to Formulary Management”. Additionally, this year Kai has been awarded an AHRQ Health Services Research Dissertation grant which provides funding for the completion of his dissertation research. Regarding professional service, Kai has been selected to serve on the editorial advisory board for the Journal of Managed Care & Specialty Pharmacy. Finally, he served as a guest speaker for 2 UW courses for PharmD students. Kai is very grateful to his mentors at PORPP for their advisement.

Justin Yu, PharmD, MS
UW/Bayer Post-Doctoral Fellow 2014-2016
Justin Yu is beginning the 2nd year of his post-doctoral fellowship with the University of Washington and Bayer. Prior to the fellowship, he received his PharmD from the University of Southern California, where he was active in student organizations for the pharmaceutical industry and managed care. As a pharmacy student, he also worked as an intern in both health-system and ambulatory care settings – the latter which he credits for first sparking his interest in HEOR. Following pharmacy school, Justin spent one year at the University of Washington, where he worked towards his Master’s degree in health economics and outcomes research. Notable projects he worked on included a cost-effectiveness analysis of idelalisib for relapsed chronic lymphocytic leukemia and a systematic review of the absenteeism costs of cancer. Both projects were presented as posters at ISPOR 2015 and are currently being prepared for publication. Additionally, Justin has also researched utility values for non-Hodgkin’s lymphoma, which he aims to present at a future conference and later publish. Lastly, Justin is currently working on his thesis, which is titled “The Indirect Costs and Outcomes Associated with Non-Hodgkin’s Lymphoma” and involves the use of MarketScan Health Productivity & Management data. Justin is excited to be at Bayer for the 2nd year of his fellowship and looks forward to collaborating and getting to know everyone on the HEOR team.
Jean McDougall, PhD, MPH

Jean is conducting a study of determinants of adherence to and elasticity of demand for tyrosine kinase inhibitors as part of her PhRMA Foundation Health Outcomes Fellowship. She is working with her mentors Sean Sullivan and Scott Ramsey on a variety of cancer economics and outcomes projects, including an analysis of the costs, resource utilization, and impact on survival of skeletal related events among men with prostate cancer, the results of which were presented at the American Society of Clinical Oncology (ASCO) Genitourinary Symposium in February and the ASCO Annual Meeting in May. In the last year of her fellowship, Jean is writing a career development award with the goal of developing an independent research program addressing socioeconomic disparities in the application of personalized medicine.

Souvik Banerjee

Souvik has recently commenced his second year in the Pfizer post-doctoral fellowship program at PORPP. Over the course of the past year, he has worked closely with Lou Garrison on a number of projects and has also collaborated with researchers at the Group Health Research Institute in Seattle. Souvik’s doctoral dissertation chapter, “Effects of Psychiatric Disorders on Labor Market Outcomes: A Latent Variable Approach Using Multiple Clinical Indicators” was presented at the Society of Labor Economists 4th World Meeting in Montreal by one of his co-authors and has been conditionally accepted for publication in *Health Economics*. He has also worked on a study that sought to estimate the cost-effective device prices for pediatric cochlear implants in India and this work was presented at the ISPOR 20th Annual Meeting in Philadelphia, 2015. During the summer of 2015, Souvik spent close to 8 weeks in New York City at Pfizer, Inc., working primarily with Dick Willke and will continue with the existing projects in 2015-2016.

**PORPP ENDOWED PRIZE RECIPIENTS 2015**

The PORPP Endowed Prize was given to two students this year. Both Mark Bounthavong and Vanessa Shih had winning papers and they each received $500. The title of Mark’s paper was: “A Cost-Utility Analysis of Biologics for Moderate-to-Severe Crohn’s Disease: Evidence Synthesis Using Bayesian Network Meta-Analysis”. Vanessa’s paper was titled: “Estimating the Cost-Effectiveness of Left Atrial Appendage Closure with the Watchman® Device versus Dose-Adjusted Warfarin for Stroke Prevention in Atrial Fibrillation”.

The $1,000 Prize is awarded to eligible candidates in the PhD or Master’s program in PORPP, or related fields such as Public Health Genetics, Health Services, Economics or Global Health who are enrolled in a class taught by a PORPP faculty member. The paper must deal with an original health policy or health economic issue.
The University of Washington ISPOR Student Chapter exploded with new activity in the 2014-2015 academic year. Under the direction of faculty advisor Professor Lou Garrison and leadership of student co-presidents Marita Mann and Kai Yeung, the UW ISPOR student chapter blossomed and held more events than ever before.

Following a productive student breakout discussion on mentoring at the previous spring retreat, the ISPOR student chapter created a new peer-mentoring program. In Fall 2014, new PhD students were assigned a volunteer peer-mentor a few years advanced in the PhD program. The matches were a huge success and provided support for new students in areas such as navigating conferences for abstract submission and when to form study groups to prepare for preliminary exams.

The UW ISPOR student chapter welcomed Fall quarter 2014 by hosting very popular catered networking lunches after each weekly PORPP graduate seminar. An ISPOR Student Chapter Grant supported the activity and it successfully connected students to each other and faculty.

In the winter, ISPOR Student Chapter funds supported travel for four students to present at the Western Pharmacoeconomics and Outcomes Research Conference in Denver, CO. It was a valuable opportunity to meet PhD students and faculty from other programs and practice presentation skills. While at the conference, Mark Bounthavong received the award for best podium presentation.

Throughout spring quarter, the chapter engaged students of all stages by planning and hosting the weekly graduate seminar with a focus on professional development. With support from Professor Josh Carlson, the officers planned 11 seminars and invited guest speakers for sessions on entrepreneurship, management, and strengthening our resumes. Student Chapter Officers Mark Bounthavong and Meng Li dedicated months planning content for the May 2015 PORPP Spring Retreat. Their efforts found the perfect balance of valuable presentations, engaging student-faculty discussions, and fun team-bonding activities.

As student chapter president, Marita Mann served on a planning committee for ISPOR and participated in monthly conference calls with other chapter presidents. Three PORPP students attended the ISPOR Student Presidents Retreat in Philadelphia. The retreat was an excellent opportunity to learn what other PhD programs have accomplished through their ISPOR student chapters.
“As vice-president of the ISPOR student chapter at UW, I was able to observe our co-presidents’ leadership skills and vision. Their vision was to expand the influence of the ISPOR student chapter and to continue collaboration across different departments. I hope to continue this mission as well as expand our network to beyond the Pharmacy School.”

- Mark Bounthavong, Vice-President of the ISPOR Student Chapter

In the upcoming 2015-2016 academic year, the new ISPOR Student Chapter Officers are excited to participate in planning 20th anniversary events such as the research symposium and special edition spring PORPP retreat. In addition to continuing all the new chapter activities, the student chapter plans to grow the peer-mentoring program by building on mentorship of local high school students that some PORPP PhD students have already started. Our PORPP graduate students and ISPOR Student Chapter members have been invited to lecture and mentor students at Lakeside High School, Fairview Christian School, Nathan Hale High School, and Roosevelt High School. We also look forward to a joint effort with UW Health Services PhD Student Jeremy Snider, student chapter president for Academy Health, to plan a screening of the movie “PhD” about the life of a graduate student.

2014-2015 OFFICERS
President: Marita Mann
Co-President: Kai Yeung
Vice-President: Mark Bounthavong
Treasurer: Meng Li

2015-2016 OFFICERS
President: Mark Bounthavong
Vice-president: Blythe Adamson
Secretary: Elisabeth Vodicka
Treasurer: Meng Li

ADVANCED METHODS:
Advanced Methods is exactly what you would expect it to be—a series dedicated to the promotion and application of advanced methods in epidemiology and economics. The large amount of material that gets compressed into three quarters provides a firm foundation on topics such as two-part models, generalized linear models, and multiple imputation for missing data. It also exposes students to progressive methods such as extended estimating equations and instrumental variables. All these tools allows the student to mitigate bias and establish significant associations and, in some cases, causal inference. More importantly, this series imbues students with a sense of responsibility to use these tools appropriately and to become the future custodians of scientific integrity.
GRADUATE TRAINING

AHRQ T32

The AHRQ-funded Health Services Research Training (HSRT) Program at the University of Washington in the Department of Health Services and the School of Pharmacy prepares research leaders to improve health in diverse populations by conducting interdisciplinary studies and implementing the results in a rapidly changing health care and social-political environment. The program builds capacity in health services research nationally and in the Pacific Northwest region, serving 5 states with 27% of the U.S. land mass.

Trainees include six predoctoral students in the Department of Health Services and two predoctoral students in the Pharmaceutical Outcomes Research & Policy Doctoral Program (PORPP), who also will obtain a university-wide Certificate in CER. We recruit highly qualified trainees from different backgrounds who have the potential for an outstanding career in health services research.

The competency-based curriculum provides: 1) comprehensive knowledge of the health care system, health policy and the determinants/disparities of population health; 2) rigorous training in the theory and research methods of key disciplines; 3) expertise in an area of emphasis through intensive preparation in theory, content, and methods; and 4) training in effective communication within organizations and with scientific and lay audiences. Trainees carry out applied, multidisciplinary research at external research partners and UW centers. Strong mentorship produces high quality research aligned with AHRQ priorities and facilitates the translation of findings into policy and practice.
This program aims to develop early career scientists in Patient Centered Outcomes Research, evidence development, adoption and evaluation. At the completion of their training, Scholars will have cutting edge Patient Centered Outcomes Research skills and a grounding in implementation and dissemination science. Our overall aims are to (1) provide Scholars with multidisciplinary training, (2) activate Scholars to utilize existing and unparalleled opportunities within the UW and affiliated institutions to learn PCOR and CER from experts with ongoing projects, multidisciplinary teams, data resources, and real world populations and stakeholders, (3) create an environment that supports the early research efforts of junior faculty, infuses them with the excitement of comparative effectiveness research and nurtures their early career development and productivity and aids in ensuring a long term career in conducting and teaching PCOR.

“There is no doubt that my research experience at PORPP has been invaluable to my career. But, I equally value the memories of fun times and lifelong friendships forged during my training. When I meet new PORPP students and faculty, I’m delighted to see that the camaraderie continues.”

Shelby Reed, PhD (Post-Doctoral Fellowship 2000)
AWARDS 2014–15

**FACULTY AWARDS**

**Aasthaa Bansal**, Best Podium by New Investigator at the ISPOR Annual International Meeting, Philadelphia, 2015

**Aasthaa Bansal**, Research Starter Grant in Health Outcomes, PhRMA Foundation, 2015

**Bernardo Goulart**, New Investigator Award from the Cancer Center Support Grant, UW & Fred Hutchinson Cancer Consortium

**Josh Roth**, New Investigator Research Presentation Podium Award, ISPOR, 2015


**Gary Lyman**, Newsweek, “Top Cancer Doctors in America”

**Sean Sullivan**, Research Achievement Award in the Pharmaceutical Sciences, from The American Pharmacists Association (APhA)

**STUDENT AWARDS**

**Blythe Adamson**, Center for AIDS Research (CFAR) Trainee Grant, 2015

**Blythe Adamson**, Scholarship Award for the Summer Institute in Statistics and Mathematical Modeling of Infectious Diseases, 2015

**Mark Bounthavong**, Best Podium presentation at the Western Pharmacoconomics and Outcomes Research Conference, Denver, CO

**William Canestaro**, AFPE Pre-doctoral Grant

**William Canestaro**, PhRMA Foundation 2015 Pre-Doctoral Fellowship

**Meng Li**, Best Poster Finalist at ISPOR International Annual Meeting, Philadelphia, 2015

**Jean Malacan**, Very Honorable Distinction for Pharmacy Thesis and nomination for the Annual Pharmacy School Award, Paris Sud University

**Cara McDermott**, Society for Medical Decision Making Lee B. Lusted Prize Finalist, 2014 Annual Meeting

**Elisabeth Vodicka**, Recipient of Stergachis Endowed Fellowship for International Exchange

**Kai Yeung**, Best Podium by student at the 2015 ISPOR Annual International Meeting (second year in a row!)

**Kai Yeung**, Agency for Healthcare Research and Quality Health Services Research Dissertation Grant

REDUCING BARRIERS FOR THE AMBITIOUS SCHOLARSHIP, ESTABLISHED BY ALUMNUS DR. DANA HURLEY

**Blythe Adamson**, Mark Bounthavong, Marita Mann, Solomon Lubinga, Meng Li

PORPP AWARD FOR BEST GRADUATE STUDENT PAPER 2014-2015:

**Mark Bounthavong, Vanessa Shih**

**ALUMNI AWARDS**

**Julia Slejko** (our last Pfizer post-doc, for work was based on the PORPP Heath-Tech Fund project), Best Poster by New Investigator at the 2015 ISPOR Annual International Meeting

**Chris Wallick** (alumnus and previous Allergan fellow), Best Poster at the 2015 ISPOR Annual International Meeting.
SERVICE

Anirban Basu, Associate Editor, Health Economics
Anirban Basu, Associate Editor, Journal of Health Economics
Amy Cizik, UW Graduate & Professional Student Senate Childcare Advisory Committee
Beth Devine, Board Member, Advisory Panel of the Research & Education Foundation of the American Society of Health-System Pharmacists
Beth Devine, Senior Editor, eGEMS, Generating Evidence & Methods to improve patient outcomes, AcademyHealth
Lou Garrison, International Meeting Program Co-Chair and President-elect (2016-2017) of the International Society for Pharmacoeconomics &Outcomes Research (ISPOR)
Shelly Gray, Editorial Board Member, American Geriatrics Society
Shelly Gray, Board Member, Safe Driving Program for Older Adults
Lotte Steuten, Board Member, Scientific Advisory Board of the Global Initiative for Translational Health Economics (GITHE)
Lotte Steuten, Editorial Board Member, OMICS: A Journal of Integrative Biology
Lotte Steuten, Editorial Board Member, Applied Health Economics & Health Policy Journal
Dave Veenstra, Co-Editor, Value in Health
Elisabeth Vodicka, Member of Students of Public Health Engaged in Reproductive Rights Efforts
Kai Yeung, Editorial advisory board for the Journal of Managed Care & Specialty Pharmacy

ISPOR STUDENT CHAPTER OFFICERS 2014-2015
Marita Mann, President
Kai Yeung, Co-President
Mark Bounthavong, Vice President
Meng Li, Secretary
Professor Lou Garrison, Faculty Advisor
STUDENT PUBLICATIONS & PRESENTATIONS

STUDENT POSTERS


Garland T, Cizik AM, Jones R, Davidson D. “Outcomes of Leiomyosarcoma of Bone: A Comparative Study with Other Primary Bone Sarcomas.” Presented as a poster at the annual meeting of the Connective Tissue Oncology Society, Berlin, Germany, October 2014.

Keyloun KR, Devine EB. Estimating the Cost-Effectiveness of Vortioxetine versus Desvenlafaxine as first line Therapy for mild to moderate Major Depressive Disorder in Remitted Patients. Poster Presentation at the International Society of Pharmacoconomics and Outcomes Research International Meeting, May 2014; Philadelphia, PA.


Lubinga, S. A budget impact analysis of the use of Methylene Blue Treated Plasma compared to Quarantine Plasma for Pathogen Reduction. AABB; Spain, 2015 (poster).


**PUBLICATIONS**


JOSEPH BABIGUMIRA


“The PORPP PhD program and post-doctoral fellowship provided an ideal trajectory for an academic career in pharmaceutical outcomes research. Memories will not be forgotten of grad office studies, trailer park shared office space, raccoons, and dear friends.”
Jonathan D. Campbell, PhD, 2007
DENISE BOUDREAU


BRIAN BRESNAHAN


JOSH CARLSON


EMILY BETH DEVINE


LOUIS GARRISON, JR.


BERNARDO GOULART


Goulart, B. Lung cancer CT screening is cost-effective but implementation matters. Evidence Based Medicine. 2015 Apr;20(2):78.


SHELLY GRAY


RYAN HANSEN


JERRY JARVIK


GARY LYMAN


JEANNINE MCCUNE


SCOTT RAMSEY


JOSHUA ROTH


Roth, JA, Bradley K, Thummel KE, Veenstra DL, Boudreau D. 2015. Alcohol misuse, genetics, and major bleeding among warfarin therapy patients in a community setting.. Pharmacoepidemiology and drug safety

AASTHAA BANSAL  
PI, Comparative effectiveness of molecular response guided sequential treatment strategies in chronic myeloid leukemia, PhRMA Foundation, 2015-2016.  

ANIRBAN BASU  
PI Value of information methods for NHLBI trials R01HL126804, NHLBI 4/2015-3/2019  

DENISE BOUDREAU  
Co-Principal Investigator Protocol for ER/EA Opioid Post-Marketing Requirement Studies: Observational Study #2065-1A  
Campbell Alliance, Ltd. Grant # SOW#1 #2065-1A (Boudreau) 7/2015-12/2016  
Co-Investigator/Site Principal Investigator Treatment and Outcomes in Diabetic Breast Cancer Patients  
National Cancer Institute  Grant # 1R01CA188353 (Gold) 04/2015-03/2019  

BETH DEVINE  
PI UW Site Consortium, Evidence-based Practice Center (EPC) V with Oregon Health & Science University, AHRQ, 2015 - 2019  
PI/Faculty Mentor, UW-Allergan Post-Doctoral Fellowship (Training Grant), Allergan Pharmaceuticals, 2012 -  
PI, Herb Jones Foundation.  ITHS Certificate in Translational Team Science. 2015-2017  

LOUIS GARRISON, JR.  
PI, Estimating the Burden of Illness of Giant Cell Arteritis  
Genentech 8/14 – 9/15  
PI, Pfizer Fellowship #3 Pfizer Pharmaceuticals, 7/2014-6/2016  

RYAN HANSEN  
PI, A Randomized Controlled Trial of In-Home Tele-behavioral Health Care Utilizing Behavioral Activation for Depression 2015 – 2016: Geneva Foundation (Department of Defense)  
PI Estimating the Economic Impact of H.P. Acthar Gel in Multiple Sclerosis and Nephrotic Syndrome, 2015 – 2016, Mallinckrodt Pharmaceuticals  

JERRY JARVIK  

GARY LYMAN  
Co-Investigator, PI-Ramsey Pragmatic Trial to Improve Colony Stimulating Factor Use in Cancer PCORI 04/15 – 03/19 1.20 CPM  

SCOTT RAMSEY  
PI, A Pragmatic Trial to Improve Colony Stimulating Factor Use in Cancer “ submitted to the Patient Centered Outcomes Research Institute (PCORI) for funding period 04/01/15 – 03/31/19. Funding anticipated 6/1/2015.  
PI, Cost Effectiveness Analysis of Stem Cell Transplant in Older MDS Patients, National Heart Lung and Blood Institute (NHLBI), R01 HL126589. 04/15/15 – 3/31/19.  

LOTTE STEUTEN  

SEAN SULLIVAN  
Co-Investigator, PI-Scott Ramsey, MD, PhD Pragmatic Trial of Pharmacist-based Guideline Use of Colony-Stimulating Factors in Solid Organ Tumors (PCORI,) 2015-2019  
Principal Investigator K-12 Mentored Career Development Program in Patient-Centered Outcomes Research (AHRQ) 2014-2019  

DAVID VEENSTRA  
Co-Investigator, Jarvik (PI) Genomic Discovery and Implementation Across a Healthcare Delivery System: Enhancing a Partnership (eMERGE) 8/15-7/16 0.60 cal. mos. Group Health Research Institute A98549  
Co-Investigator Value of information methods for NHLBI trials R01HL126804, NHLBI 4/2015-3/2019
PORPP would like to acknowledge our many supporters of this past year. Our accomplishments would not have been possible without these generous educational grants and gifts.

AbbVie, Inc.  Mitchell and Mandy Higashi  David E. Spackman
Allergan  Daniel and Rebecca Malone  Andy and JoAnn Stergachis
Bayer AG  Cara McDermott & Scott Gardner  Sean and Catrena Sullivan
Benevity  Lisa Meckley and Tucker Sylvestro  Takeda Pharmaceuticals
Jonathan & Christine Campbell  Microsoft Corporation  David and Julie Veenstra
Josh and Amy Carlson  Pacira Pharmaceuticals, Inc.  Bruce Wang, PhD
James T. Cross  Pfizer, Inc.  PORPP Health Technology Fund
Pete and Kathy Fullerton  Scott & Ellen Ramsey  (AbbVie, Inc., Allergan, Bayer AG,
Louis and Fran Garrison, Jr.  Shelby and Steve Reed  Bristol-Myers Squibb Company,
GE Foundation  Joshua Roth and Meghann Glavin  Mindy Cheng, Genentech, Merck,
GE Healthcare  Julia Slejko  Novo Nordisk, Inc, Novartis, Pfizer,
Thomas Hazlet, PharmD, DrPH  Takeda Pharmaceuticals)
NEW ALUMNI
CLASS OF 2015

PHD, MS

DOCTOR OF PHILOSOPHY DEGREES

Maria Agapova, MS, PhD
Chair: Beth Devine, PharmD, MBA, PhD

Caroline (Carrie) Bennette, MPH, PhD
Dissertation: “Prioritizing Research: The Use of Risk Prediction, Value of Information Analyses, and Portfolio Evaluation to Improve Public Investments in Cancer Clinical Trials”
Chair: David Veenstra, PharmD, PhD

Elizabeth James, PharmD, PhD
Chair: Tom Hazlet, Dr P.H., PhD

Kai Yeung, PharmD, PhD
Dissertation: “Impact of a Value Based Formulary on Health Services Utilization and Costs”
Chair: Sean Sullivan, BScPharm, MS, PhD

MASTER’S DEGREES

Katelyn Keyloun, PharmD, MS
Thesis: “Adherence Outcomes to Antidepressant Medication Therapy in Patients with Major Depressive Disorder”
Chair: Beth Devine, PharmD, MBA, PhD

Ryan Pistoressi, PharmD
Thesis: “Cost-Utility Analysis of Medications for Relapsing-Remitting Multiple Sclerosis from a United States Third Party Payer Perspective”
Chair: Louis Garrison, Jr., PhD

Vanessa Shih, PharmD, MS
Thesis: “Assessing the Burden of Worsening Self-Reported Vision in Older Americans”
Chair: Beth Devine, PharmD, MBA, PhD

Justin Sammy Yu, PharmD, MS
Thesis: “Indirect Costs and Outcomes Associated with Non-Hodgkin’s Lymphoma”
Chair: Josh Carlson, MPH, PhD
INCOMING STUDENTS
WELCOME TO OUR NEW STUDENTS & FELLOWS

Sarah Baradaran, PharmD
UW/ALLERGAN POST-DOCTORAL FELLOW
2015-2017
Sarah received her PharmD degree from the University of Washington School of Pharmacy in 2015. She completed a four-year clinical internship at The Everett Clinic, where she participated in P&T decision-making, conducted literature reviews and medication utilization evaluations. Sarah’s clerkships at the FDA Department of Pharmacovigilance and Evidera’s Retrospective Observational Studies team strengthened her passion for evidence generation methods in outcomes research and real-world data. Her research interests include patient reported outcomes, pharmacoepidemiology, and post-authorization observational studies. She looks forward to working with the PORPP faculty and Allergan team.

Horacio Duarte, MD
Horacio is currently a 2nd year pediatric infectious diseases fellow at Seattle Children’s Hospital/University of Washington and is thrilled to be pursuing his research interests with PORPP. He completed his undergraduate studies at Harvard College in biological anthropology before going on to receive his M.D. at the University of Texas Medical School at Houston. During medical school, he spent a year at the NIH conducting clinical research studying cardio-metabolic complications of HIV and then went on to complete his pediatrics residency at Seattle Children’s Hospital. Horacio has had a long-standing interest in global health with a particular interest in economic evaluation of programs aimed at improving child health in resource-poor settings. He is currently studying the cost-effectiveness of HIV drug resistance testing in Kenya, and was recently awarded a Pediatric Scientist Development Program award to support his research efforts. Horacio is excited to learn from PORPP faculty and fellow students.

Elizabeth Brouwer, MPH
Lizzy joins PORPP from University of Washington’s Department of Global Health, where she worked for over two years as a Health Economics Analyst on Disease Control Priorities, summarizing and synthesizing economic evidence for global health interventions. Before coming to Seattle, Lizzy received her Master of Public Health in Health Economics at the University of Michigan (’13) while working with health service utilization data for tuberculosis patients in South Africa. Lizzy gained an interest in health service utilization during her time as a policy analyst in the Michigan House of Representatives, which was further strengthened by a 6-month research stint in Accra, Ghana. Lizzy is eager to hone her skills in economic evaluation and health outcomes modeling in order to continue her advocacy for efficient and effective health policy at all levels.

Nathaniel Hendrix, PharmD
Nathaniel earned his PharmD from the University of Washington in 2015. While a PharmD student, he completed an internship in pharmacy informatics at Virginia Mason Medical Center. There, he honed the skills that later led to his taking a position at PATH creating demand forecasts and economic models for their global health initiatives. He joins PORPP with the goal of deepening his knowledge of health economics and the methodology for determinations of value. Nathaniel’s academic interests are demand forecasting, methods for cost-effectiveness analysis, and the use of large databases and artificial intelligence in healthcare.
Catherine Lockhart, PharmD, MS
Cate entered the UW School of Pharmacy in 2009 as a combined PharmD/PhD student in Pharmaceutics. She earned her PharmD degree from the University of Washington in 2013, and is currently working on PhD research in the Department of Pharmaceutics to identify the pathological processes involved in the development of a rare, genetically mediated, ocular disease called Bietti’s crystalline dystrophy (BCD). She is interested in broadening her understanding of decision analytical approaches to evaluate new health technologies, but also to develop methods to inform decision makers on efficient allocation of funds to projects that are expected to have the greatest impact on advancing research. She is excited to join PORPP as a MS student to better prepare for a career as a future leader in health economics and outcomes research. Prior to graduate school, Cate trained as an electrical engineer at the University of Washington and worked as a research scientist in the Department of Radiology focusing on nuclear imaging and positron emission tomography (PET). She also holds a BFA in Theatre Arts and BS in Visual Communications from the University of Idaho.

Amy Tung, PharmD
UW/ALLERGAN POST-DOCTORAL FELLOW 2015-2017
Amy received her PharmD degree from the University of Washington (UW) in 2015. Her interest in health economics and outcomes research (HEOR) grew from the desire to blend her background working in the tech industry as a market researcher with her interest in pharmaceutical outcomes and health policy. Her passion for HEOR continued to grow after taking various pharacoconomics and managed care electives in pharmacy school. She further developed an appreciation for the field serving as president of UW’s Academy of Managed Care Pharmacy chapter, as well as through her experience writing dossiers for pharmaceutical companies. Amy is excited for the opportunity to work with students and faculty at UW and Allergan to develop the skills necessary to become an effective health economics and outcomes researcher.

Jean Malacan, PharmD, EM
UW/BAYER POST-DOCTORAL FELLOW 2015-2017
Jean received his PharmD degree from the Paris Sud University in 2015, completing the same year an executive advanced master in strategy & management of health industries at the ESSEC business school. Researching in market access & pricing of orphan drugs, he received very honorable distinction for his pharmacy thesis and nomination for the annual pharmacy school award. Working a year at Ipsen, Jean built experience within the global market access and pricing team, working on endocrinology, oncology and neurology topics. He had prior training in Global R&D strategy at Sanofi. Joining the PORPP, Jean is excited to work with the excellent faculty at the University of Washington and the Bayer team, and build a deeper understanding in health economics & outcomes research, real world evidence and pricing & reimbursement strategies.

Wei-Jhih Wang, MS
Wei-Jhih received her MS degree in Health Services from the University of Washington in 2015, and worked with Professor Anirban Basu for her thesis about the relationship between the burden of cancer and translational research investments. In the past year, she used both a decision tree model and Markov model to evaluate cost-effectiveness for treatments of metastatic melanoma. In addition, she worked on the method for a single arm meta-analysis about liver transplantation with Drs. Susanna Nazarian and Beth Devine. Wei-Jhih also earned an MS in Biostatistics from the National Taiwan University in 2008, and worked on cancer research at a clinical trials center for several years. She is excited to join PORPP, and looks forward to enhancing her knowledge and skills in the health economics and outcomes research field.
**FACULTY**

**Joseph Babigumira**, MBChB, MS, PhD,  
Adjunct Assistant Professor

**Aasthaa Bansa**, PhD,  
Research Assistant Professor

**Anirban Basu**, PhD,  
Professor, Stergachis Family Endowed Director, PORPP,  
Professor, Health Services

**Denise Boudreau**, PhD,  
Affiliate Professor

**Brian Bresnahan**, PhD,  
Adjunct Research Assistant Professor

**Josh Carlson**, MPH, PhD,  
Assistant Professor

**Emily Beth Devine**, PharmD, MBA, PhD,  
Associate Professor, Associate Director, Graduate Programs

**David Flum**, MD, MPH,  
Adjunct Professor

**Louis Garrison, Jr.**, PhD,  
Professor & Interim Director

**Bernardo Goulart**, MD, MS,  
Adjunct Assistant Professor

**Shelly Gray**, PharmD, MS,  
Professor

**Ryan Hansen**, PharmD, PhD,  
Research Assistant Professor

**Thomas Hazlet**, PharmD, DrPH,  
Associate Professor

**Jerry Jarvik**, MD, MPH,  
Adjunct Professor

**Larry Kessler**, ScD,  
Adjunct Professor

**Gary Lyman**, MD, MPH,  
Co-Director, HICORE (Hutchinson Institute for Cancer Outcomes Research and Evaluation), Fred Hutchinson Cancer Research Center

**Jeannine McCune**, PharmD,  
Professor

**Donald Patrick**, PhD,  
Adjunct Professor

**Scott Ramsey**, MD, PhD  
Adjunct Professor, Director, HICORE (Hutchinson Institute for Cancer Outcomes Research and Evaluation), Fred Hutchinson Cancer Research Center

**Andy Stergachis**, PhD,  
Professor of Pharmacy and Global Health, Associate Dean, School of Pharmacy, Director, Global Medicines Program

**Lotte Steuten**, PhD  
Associate Member, HICOR (Hutchinson Institute for Cancer Outcomes Research and Evaluation), Fred Hutchinson Cancer Research Center; Associate Professor, Pharmacy

**Sean Sullivan**, PhD  
Professor, Dean of the School of Pharmacy

**David Veenstra**, PharmD, PhD,  
Professor, Associate Director, PORPP  
Director, Graduate Programs

**STAFF**

**Penny Evans**  
Graduate Program Advisor

**Laurie Gold**, PhD,  
Research Scientist

**Paul Kraegel**, MSW,  
Program Operations Specialist
PORPP ADMINISTRATION

Director
Anirban Basu, PhD
basua@uw.edu

Associate Director and Director of Graduate Programs
David Veenstra, PharmD, PhD
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