GENERATING COMPARATIVE EVIDENCE
to INFORM and ENRICH DECISION-MAKING

We are a global leader in generating knowledge to improve individual and population health through transformative learning, research, and dissemination about the effectiveness, safety, and value of medical products, services, and policies.

OUR MISSION

Research: Develop innovative methods and generate actionable evidence about the effectiveness, safety, and value of medical products and services that improve decision making in health care and policy.

Training: Provide transformative training in health economics, outcomes research, and policy analysis to meet contemporary health care challenges regionally, nationally, and globally.

Service: Be a leading resource on the effectiveness, safety, and value of medical products and services by providing expertise and facilitating collaborations at the regional, national, and global level.
This year, both the School of Pharmacy and the CHOICE Institute are celebrating a major milestone. 2019-2020 marks 125 years as a School of Pharmacy, and 25 years since the Pharmaceutical Outcomes Research and Policy Program (PORPP) was officially designated at the UW. Now as the CHOICE Institute, we continue to grow and transform, expanding our impact on population health.
I am pleased to present the 2nd Annual Report for The Comparative Health Outcomes, Policy, and Economics (CHOICE) Institute. We’ve had a wonderful and productive year, with several important changes to our most valuable asset – our people!

Please join us in welcoming Marina Gano to The CHOICE Institute as our Graduate Program & Operations Manager. Many of you had the pleasure of meeting Marina at the recent ISPOR meeting in New Orleans. She brings exceptional leadership and organizational skills to her position and is a strong student advocate. We are so pleased she has joined the CHOICE team!

I’m also happy to introduce Anthony Morgan (who goes by Morgan), CHOICE’s first Research Project Manager. Morgan will lead administrative support and oversight for multi-funded and multi-site research studies with a focus on population health sciences, medical products and health technology evaluation, and health economics. Morgan brings a wealth of experience, knowledge and skill to the position of Research Project Manager at the CHOICE Institute.

CHOICE faculty and students continue to be recognized for their achievements – I’ll highlight a few here. First, congratulations to 3rd-year PhD student Lauren Strand who was named a UW Magnuson Scholar. Magnuson Scholars are selected for their excellent academic performance and outstanding potential for research in the health sciences. Lauren will investigate the relationship between recreational cannabis use in Washington state and opioid overdose.

Elizabeth “Lizzy” Brouwer (5TH yr-year PhD student) has been awarded the prestigious Pharmaceutical Research and Manufacturers of America Foundation (PhRMA) 2019 Pre-Doctoral Fellowship in Health Outcomes. This award will provide Lizzy with dissertation support to study the uptake of value-based formularies and their application to specialty drugs.

The Oregon State University College of Pharmacy honored Sean D. Sullivan with the 2019 Icons of Pharmacy award. Sean was recognized for his leadership as Dean at the UW School of Pharmacy, where his engagement has helped transform the profession. Sean had this to say about life as a Dean, “This is a job none of us are trained for. Most days, it’s challenging. Some days, it’s extremely difficult. And on a few occasions, it is glorious.”

The editors of Health Economics named Anirban Basu the 2019 Health Economics Distinguished Author. We did notice he had some great co-authors from CHOICE too! As some of you know, Anirban is on sabbatical in London during summer and fall quarters.

The grant productivity of the CHOICE Institute continues to be strong and diversified. CHOICE investigators received over $2M in grant and contract funding over the past year from a wide variety of sources including NIH, AHRQ, foundations, and industry. Brand new awards include Zach Marcum’s career development award from the NIH’s National Institute of Aging (NIA) for pharmacoepidemiology studies in Alzheimer’s Disease, and Beth Devine’s award from AHRQ to study the use of electronic decision alerts for pharmacogenomic tests.

We continue to expand our post-PharmD fellowship training, with the addition of a second Genentech fellow, and a new Seattle Genetics fellowship. Training clinicians in HEOR – particularly PharmD’s – has always been a key focus of our program. The CHOICE faculty have been intimately involved with the newly revamped UW PharmD curriculum, which will in part help identify and train PharmD students interested in HEOR earlier in their training. A special shout-out goes out to our UW PharmD team that won the Academy of Managed Care Pharmacy (AMCP) annual national Pharmacy & Therapeutics (P&T) Competition for Student Pharmacists! Many of the students who compete in this competition go on to apply for fellowships and PhD programs, so it is a great connection we enjoy being part of.

It was wonderful to see our alumni and friends at ISPOR in New Orleans, and for those who could not make it we hope to connect with you in the coming year. We remain ever grateful for your continued support that is instrumental to our success in the future. Lastly, I’d like to welcome all of our new students and post-docs. You are the future of our Institute and our field.

Sincerely,

David Veenstra, PharmD, PhD
Acting Director, The CHOICE Institute
MARINA: GRADUATE PROGRAM AND OPERATIONS MANAGER

Marina Gano is our new Graduate Program and Operations Manager and joined in February. Marina grew up in Fairbanks, Alaska with brief periods in Germany and Maryland. She earned a Bachelor of Arts in Foreign Languages and Literature (Spanish and German) from the University of Alaska Fairbanks (UAF).

Her career in higher education began in the Office of Admissions and Registrar at UAF, and then moved to the UW in 2014 as an advisor in Graduate Enrollment Management Services (GEMS). In this role, Marina provided advising, training, and support to the staff, faculty, students, and applicants of the three UW campuses. Marina recently earned a Master of Education degree in Educational Leadership and Policy Studies (Higher Education) from University of Washington.

Through her role in GEMS and her graduate program, she's gained valuable knowledge and perspectives regarding graduate education and the UW, which has served to be an asset thus far in this role. She says she learns something new every day in CHOICE and has felt very fortunate to have landed here with such a collaborative, creative, and fun group of faculty and students. She appreciates how welcoming and supportive everyone has been in CHOICE and the School of Pharmacy in general. In her free time, Marina enjoys cooking and trying new recipes, listening to podcasts, gardening, traveling, creating art and spending time with her cats Cosmo and Luna.

MORGAN: CHOICE RESEARCH PROJECT MANAGER

Anthony Morgan (preferred name Morgan) is the newly hired Research Project Manager for The CHOICE Institute! Prior to joining us here at UWSOP, he coordinated single and multi-site clinical and exploratory research at Johns Hopkins in Baltimore and more recently at Seattle Children’s.

Morgan will be providing high level support to CHOICE Director Anirban Basu and other CHOICE investigators, including Aasthaa Bansal. In general, he will lead administrative support and oversight for multi-funded and multi-site research studies with a focus on population health sciences, medical products and health technology evaluation, and health economics. Morgan has been managing public health programs and research projects since 2002. He has a strong history of managing multiple public health programs and research initiatives focused on a variety of racial, sexual and gender minority adolescents and emerging adults. Morgan brings a wealth of experience, knowledge and skill to the position of Research Project Manager at the CHOICE Institute. We are so pleased he has joined the team here.
From Seattle to London, or, where in the world is Dr. Anirban Basu?

As previously noted, CHOICE director, Anirban Basu, is currently on a six-month sabbatical in another rainy city across the pond, at the London School of Hygiene and Tropical Medicine (LSHTM). His objective is to develop novel methods in machine learning and causal inference, which aligns with his experience and expertise. This was identified as a strategic need for the CHOICE Institute during our strategic planning process. His time in London will not only be a great learning experience, but will enrich our connections with the global research community, strengthen our long-term funding prospects, and enhance our own research programs.

Anirban gave two noteworthy talks over the summer as part of his sabbatical activities. He presented a lecture at LSHTM titled, “Economics of choices in the era of personalized medicine”. In this lecture, Anirban discussed how assessments of value and insurance coverage can reflect evidence of heterogeneous treatment effects and inform moves towards precision medicine. He also spoke at the London Office of Health Economics (OHE) – featured in the photo here with CHOICE Affiliate Professor Lotte Steuten, where he gave a seminar entitled, “Health Years in Total (HYT): A New Health Objective Function for Cost-effectiveness Analysis”. The new HYT framework is the product of CHOICE faculty research and grew out of our collaboration with the Institute for Clinical and Economic Review (ICER) project. This new metric of effectiveness for cost-effectiveness, Health Years in Total (HYT), overcomes both the distributional issues raised by Quality-Adjusted Life-Years (QALYs) and the efficiency challenges of Equal Value of Life (EVL). The HYT framework fundamentally separates life-expectancy changes and quality of life changes in an additive scale. Dr. Josh Carlson will be presenting on this new framework at the Corporate Advisory Board Meeting this fall.

We (especially Dave) look forward to welcoming back Anirban in January!
CLASS OF 2019

MASTER OF SCIENCE

Shalak Gunjal  
BPharm 2012, University of Pune, India; MS 2014, University of Houston  
THESIS: “Healthcare Utilization and Costs associated with Sickle-cell disease in the United States: A Retrospective Claims Analysis”  
ADVISOR: Anirban Basu, PhD

Jamie Ta  
BS 2013, PharmD 2018, University of California San Diego  
THESIS: “Healthcare Resource Utilization and Costs Associated with Non-Adherence to Pharmacotherapy for Major Depressive Disorder”  
ADVISOR: Beth Devine, PharmD, MBA, PhD

Thomas Hopkins  
BS 2014, Loyola University of Chicago; PharmD 2018, University of Illinois Chicago  
THESIS: “Surgical Costs Associated with the Treatment of Uterine Fibroids”  
ADVISOR: Ryan Hansen, PharmD, PhD

Ashley Kim  
BS 2012, University of California Los Angeles; PharmD 2018, University of San Francisco  
THESIS: “Characterizing the Healthcare Resource Utilization and Costs By Disease Severity Among Patients with Geographic Atrophy Secondary to Age-Related Macular Degeneration”  
ADVISOR: Aasthaa Bansal, PhD

Eddie Neuberger  
BS 2013, PharmD 2017, University of Maryland; MBA 2018, University of Baltimore  
THESIS: “Evaluating Methods to Estimate United States Multiple Sclerosis Prevalence from Administrative Health Claims Data”  
ADVISOR: David Veenstra, PharmD, PhD

DOCTOR OF PHILOSOPHY

Simrun Grewal  
BA 2008, Washington University in St, Louis; MHS 2013, Johns Hopkins University  
DISSERTATION: “Biosimilar uptake in the United States: Examining state-level longitudinal trends in biosimilar filgrastim use and their association with biosimilar substitution policies”  
COMMITTEE: Josh Carlson, PhD (Chair), Anirban Basu, PhD, Andy Stergachis, Ryan Hansen, PharmD, PhD, Jennifer Slyker, PhD (GSR).

Kangho Suh  
BA 2007, New York University; PharmD 2011, Rutgers University; 2013 MS, University of Texas Austin  
DISSERTATION: “The comparative effectiveness, safety, value, and adherence of newer P2Y12 inhibitors versus clopidogrel in the context of heterogeneity”  
COMMITTEE: Anirban Basu, PhD (Chair), Josh Carlson, PhD, Kelley Branch, MD, Bianca Fragner, PhD (GSR).
GRADUATING STUDENT SPOTLIGHT: SIMI AND KANGHO

SIMRUN GREWAL, MSH, PHD

For her dissertation research, Simrun (Simi) examined the state-level use of biosimilars, identifying three unique average biosimilar filgrastim uptake trends occurring sub-nationally in the United States. She found that while the overall impact of state-level biosimilar substitution policies is ambiguous, specific components of the policies may have interesting associations with biosimilar use. Dr. Josh Carlson serves as her dissertation chair, alongside fellow Pharmacy faculty, Drs Anirban Basu, Andy Stergachis, Ryan Hansen, and Jennifer Slyker (Graduate School Representative, Global Health).

Simi earned a Bachelor of Arts in 2008 from Washington University in St. Louis and her Master of Health Science from Johns Hopkins University in 2013. Prior to her graduate education, Simi spent several years using modeling methods to inform the development or revision of formularies in low- and middle-income countries. While at Johns Hopkins, she completed a thesis using discrete choice experiment methodology and worked on a suite of economic models for vaccines.

Simi was fully funded through the duration of her PhD program. She received the Graduate School’s Top Scholar Award upon entering the program, followed by 1.5 years on the NIH-funded PriMER Project supervised by Dr. Josh Carlson, and lastly spent 2.5 years working with the Bill and Melinda Gates Foundation through the UW START program.

Reflecting on her time as a CHOICE PhD student, Simi will miss the program environment that entices all students to learn and engage in their areas of passion in healthcare economics. Luckily, she will be in the Seattle area and looks forward to staying involved with CHOICE. Simi has recently started a position as a Manager in Global Value, Access, and Pricing at Seattle Genetics.

Congratulations, Simi! As for what comes next, apart from her exciting new career, Simi hopes to adopt a puppy in 2020. We are holding her to this aspiration, so stay tuned for photos in next year’s annual report.
KANGHO SUH, PHARMD, PHD

Kangho completed his dissertation titled, “The comparative effectiveness, safety, value, and adherence of newer P2Y12 inhibitors vs. clopidogrel in the context of heterogeneity.” He used an instrumental variable approach with person-centered treatment effects to assess physician prescribing behavior with P2Y12 inhibitors and the subsequent effect on major adverse cardiovascular events and major bleeding outcomes. On average, the newer P2Y12 inhibitors performed better than clopidogrel, but significant room for improvement exists as personalizing select patients to clopidogrel would lead to even better outcomes. In the cost-effectiveness analysis, universal treatment with the newer P2Y12 inhibitors was cost-effective compared to universal treatment with clopidogrel and historical prescribing patterns of the three antiplatelet agents. The third aim assessed adherence using conditional and unconditional quantile regressions and showed that while adherence was generally high for all the P2Y12 inhibitors, prasugrel and ticagrelor had significantly lower adherence at certain quantiles compared to branded clopidogrel, while generic clopidogrel did not.

Kangho graduated magna cum laude with a PharmD from the Ernest Mario School of Pharmacy, Rutgers University in 2011. Afterwards, he completed a health economics and outcomes research fellowship with the University of Texas at Austin (where he obtained a Master’s in Pharmacy Administration), Scott & White Health Plan, and Novartis Pharmaceuticals. To advance his methodological training, he entered the CHOICE PhD program in the Fall of 2014.

During his time at CHOICE, Kangho was funded by research assistantships with the Health Tech Fund on defining and valuing cures and highly-effective therapies, as well as with funding from Dr. Anirban Basu and Kaiser Permanente Southern California to compare two types of bariatric surgeries on several health outcomes. He also worked with Dr. Ryan Hansen on multiple sclerosis treatment and post-traumatic stress disorder psychotherapy projects and with Dr. Aasthaa Bansal on post-treatment colorectal cancer surveillance adherence. He was also part of the inaugural class of Washington Research Foundation health economics and outcomes research fellows and built a cost-effectiveness model that assessed the potential value of a functional cure in hepatitis B.

Kangho truly enjoyed and appreciated his time at CHOICE, the University of Washington, and Seattle. He will miss the mentorship and collegiality of the faculty, the friendships with students and fellows in the program, and even working in the grad room. The most memorable experiences were the overnight annual CHOICE retreat, ISPOR nights out with faculty and students, and the dinners hosted by fellow CHOICE alumnus Dr. Mark Bounthavong.

Starting in September, Kangho will start his academic career as an Assistant Professor at the University of Pittsburgh School of Pharmacy. He plans to continue focusing on comparative and cost-effectiveness research and help teach in these areas.
**WELCOME: NEW PHARM/D/MS FELLOWS**

**Ashley Cha, Bayer**  
BA, PharmD, University of Illinois at Chicago  
Ashley’s research interests are in health economics and outcomes research, specifically in the areas of patient reported outcomes, real world evidence, and cost-efficacy analyses. She is excited to join the CHOICE Institute and looking forward to working with the UW faculty and the Bayer team.

**Sam Hong, Genentech**  
BS, University of California, San Diego; PharmD, University of Illinois at Chicago  
Sam’s interest in health economics and outcomes research (HEOR) stemmed from the growing integration of real-world data in decision making by all stakeholders. His specific research interests include cost-effectiveness analyses, retrospective claims/electronic medical records analyses, and patient reported outcomes. He is excited to work with the UW CHOICE faculty and Genentech team in developing a strong foundation in HEOR principles.

**Jae Hyun Lee, Allergan**  
BS, University of California San Diego; PharmD, University of Illinois at Chicago  
Jae’s research interests largely stem from his previous work at UIC and Dymaxium. He is excited to develop his research skills in cost-effectiveness analysis, real world evidence, systematic reviews and economic modeling. He is looking forward to expanding his research interests while working with the CHOICE faculty and Allergan team.

**David Fox, Genentech**  
BS, San Francisco State University; PharmD, University of Washington  
David’s research interests include healthcare resource allocation, health policy, and the economics of treating rare diseases. He first became interested in managed care through involvement in the AMCP P&T competition, a summer internship at Premera Blue Cross, and research with Dymaxium. David also spent a month in Boston with the Institute for Clinical and Economic Review (ICER) which persuaded him to pursue a career in health economics research. David enjoys discussing the minutiae of politics, healthcare, and learning how things work. He welcomes any pharmacy students interested in health economics to contact him with questions.
Phoebe Wright, Seattle Genetics
BS, University of Tennessee, Knoxville; PharmD, University of Washington;
Phoebe is a graduate of the University of Washington School of Pharmacy. She developed a strong interest in value assessment of therapies during her rotations in PBM, health plan, and consulting settings. Her specific research interests include performance-based risk-sharing agreements and patient-reported outcomes. Prior to pharmacy school, she was a professional runner for Nike where she represented Team USA in the World Championships. She is excited to join the CHOICE institute and receive formal training in comparative effectiveness research, cost-utility analysis, epidemiology, health policy, and biostatistics. She plans to use this education to improve patient care in the oncology space at Seattle Genetics.

Brennan Beal, Allergan
BS, North Carolina State University; PharmD, University of North Carolina at Chapel Hill
Brennan recently graduated from the UNC Eshelman School of Pharmacy where he conducted research and acted as an independent data analyst for local pharmaceutical firms. His current research interests are in global healthcare economics, emerging markets, and RWE. Brennan was drawn to the program because it merges some of the best pharmaceutical firms in the world with the brightest minds in HEOR academia and is ecstatic for his role to come.
WELCOME: NEW PHD STUDENTS

Yilin Chen  
BS, Wuhan University;  
MPH, Global Health, University of Washington
Yilin joins us from the Analysis Group in Boston, where she currently works as an analyst in the HEOR team. Her interests include economic evaluation and decision analysis of medical technologies and programs, both domestically and internationally. She is looking forward to collaborating with faculty and peers at the CHOICE Institute. Her ultimate goal is to work as a researcher in the field of HEOR and policy within public or private sectors.

Shangqing (Joyce) Jiang  
BS, BA, Peking University;  
MPH, Columbia University
Joyce studied Epidemiology and Comparative Effectiveness & Outcomes Research at Columbia University as a Master of Public Health (MPH) student. While pursuing her MPH degree, she was a research assistant in projects in health economics, surgical outcomes and mental health. In addition, she was actively involved in healthcare consulting in health economics & outcomes research as an analytic intern. Joyce is enthusiastic about collaborating with faculty members and peers at the University of Washington to promote her knowledge in how pharmaceutical economics contributes to patients’ health outcomes and policy-making. Joyce is mostly interested in drug post-marketing surveillance of safety and effectiveness in patients with chronic conditions and cancer. In addition, she hopes to understand economic burden for individuals and the society by conducting economic evaluation. Ultimately in the long run, she hopes to work in regulatory agencies to contribute to pharmaceutical policy-making. Joyce also looks forward to living in Seattle and exploring her new city!

Sara Khor  
BASc, MSc, University of Toronto
Sara received her Masters in Biomedical Engineering from the University of Toronto and has years of experience as a health services researcher in academic and government settings. She most recently joins us from the Surgical Outcomes Research Center at the University of Washington where she has been a research scientist for the last 5 years conducting comparative effectiveness and health outcomes research. Her primary research interests include healthcare disparities and health economics. Sara is excited for the opportunity to continue to learn advanced methods from the CHOICE faculty. Her ultimate goal is to work as a researcher in a health system, policy-making institution, or in academia to improve healthcare equity.

Jacinda Tran  
BS, UCLA; PharmD, University of Maryland, Baltimore; MBA, University of Baltimore
Jacinda joins us from San Diego, California, where she is currently a Research Associate at IMPAQ International. She is excited to join CHOICE and work with the faculty, students, and external collaborators. Jacinda also looks forward to strengthening her foundation in research methods and developing her modeling and quantitative skills in the PhD program, with the goal of pursuing a career in academia. Jacinda’s research interests include health economic and policy evaluation, value-based care, and comparative effectiveness research.
CURRENT STUDENTS AND FELLOWS

Elizabeth “Lizzy” Brouwer
MPH, PhD Student
Lizzy is entering her fifth year at the CHOICE Institute. This year has been quite eventful for Lizzy. In June, she passed her general qualifying exam with a dissertation entitled: “Exploring the uptake of value-based formulary strategies and their application to specialty drugs”. Her dissertation topic led to a July 2019 publication in the PharmacoEconomics journal. Lizzy presented a poster at ISPOR in New Orleans on Identifying and Assessing the Feasibility of Proposed Alternative Approaches to QALY Estimation within Cost-Effectiveness Models Using a Systematic Literature Review. She received the UW Population Health Initiative Conference Travel funding to travel to ASHEcon 2019, where she gave a panel presentation on the impact of federal, state, and commercial prescription drug access policies. She worked with Josh Carlson’s PHRMA grant project to explore alternatives to the QALY and their impact on outcomes in cost-effectiveness models. Additionally, she has been a TA for the CHOICE online Health Economics certificate program’s Saudia Arabia/AbbVie cohort. Lizzy continually gives back to CHOICE, serving this year on the annual retreat committee and as lead editor of the CHOICE student blog. She was awarded a PhRMA Foundation pre-doctoral fellowship and was a recipient of the 2019 Lous Sr. and Marilyn Garrison Endowed Prize in Health Policy and Economics. She looks forward to the year ahead, where she will work with Anirban Basu on his Kaiser VSG R01 grant, defend her dissertation, and graduate.

Shuxian Chen,
MA, PhD Student
Shuxian is excited to begin her fourth year as a CHOICE PhD student. This past year was not shy of accomplishments, as Shuxian successfully completed her dissertation proposal defense. Shuxian’s dissertation work is focused on evaluating several recent health care policies which will accelerate generic drug entry to the market. In fall at the Academy of Managed Care Pharmacy (AMCP) Nexus Meeting, Shuxian and Dr. Beth Devine debuted their newly developed framework and tool that guides users in evaluating real world evidence (RWE) to inform health technology adoption decisions – the CHOICE “Real-world Evidence Assessments and Needs Guidance (REAdi) Tool.” She has also been working with Dr. Doug Barthold examining the effects of undetected cognitive decline on prescription medication management and adherence. This summer Shuxian has been interning at Flatiron Health in New York City, where she has been enriching her knowledge of cancer outcomes research as well as next generation sequencing. She looks forward to diving deep into her dissertation work in the year ahead and plans to graduate in spring.

Samantha Clark,
MS, PhD Student
Samantha is beginning the third year of her PhD program. This year, Samantha received a Developing Data-Driven Cancer Researchers (3DCR) Training (T32) Grant Award through the Fred Hutch Cancer Research Center. This training grant prepares scientists on how to address the cancer research needs of our data-rich age, optimizing the use of new data resources. In addition to serving as a 3DCR T32 trainee, Samantha works with Dr. Aasthaa Bansal analyzing electronic health records data from Kaiser Permanente on Bansal’s Personalized Risk Adaptive Surveillance in CancEr (PRAISE) project. She will continue both of these roles in the year ahead. She enjoyed serving as a Teaching Assistant for PHARM 592: Design and Analysis of Medical Studies this past
fall. She presented a poster at SMDM on adult pneumococcal disease burden in the United States in the fall, and in spring presented another poster at ISPOR on implications of using a data integration pipeline to streamline the clinical trial process for glioblastoma treatment combinations. This summer, Samantha is a visiting fellow at the Harvard T.H. Chan School of Public Health Center for Health Decision Science and working on the inaugural summer student bootcamp for claims research. She enjoys supporting her fellow students and is a CHOICE student body representative, and our ISPOR chapter secretary.

Ashley Kim, PharmD, MS, 2nd Year Fellow
Ashley is entering her 2nd year of the UW/Allergan fellowship. During the past year, Ashley worked on various research areas in the areas of metastatic non-small cell lung cancer and age-related macular degeneration. She has been working the GHEOR eye care team at Allergan to develop her master’s thesis, where she analyzed IQVIA claims data to describe the overall burden of illness of geographic atrophy by disease severity. She is grateful for her year-long training at UW, and is excited to transition to Allergan, where she will be supporting the eye care pipeline.

He (Karen) Guo, MS, MPH, PhD Student
Karen is entering her third year at the CHOICE Institute. In her second year, Karen worked with Dr. Dave Veenstra utilizing the value of information analysis to increase family communication about colorectal cancer with or without polyposis (CRC/P) risk and screening. Karen presented a poster at the Society for Medical Decision Making (SMDM) in Montreal titled, Modeling the Cost-Effectiveness of Six Diagnostic Strategies for Suspected Pediatric Appendicitis. “Karen is also a Washington Research Foundation fellow, where she is supporting Institute for Systems Biology design an economic model for sepsis. Beginning this summer, Karen is transitioning to work as a research assistant with Professor Beth Devine on the Cancer Health Assessments Reaching Many (CHARM) study. Karen is currently mentoring a Master’s student from her alma mater, The London School of Economics, in the Department of Health Policy. For the year ahead, Karen looks forward to finalizing her dissertation topic and continually helping PhD students connect with job agents in US, UK and Singapore markets.

Nathaniel Hendrix, PharmD, PhD Student
Nathaniel is entering his fifth and final year of the PhD program. He started this past year off with a bang by defending his dissertation proposal in October. He continues to work on his dissertation, which concerns using the tools of health economics to resolve translational issues around bringing machine learning-based diagnostics into clinical practice. He delved into pharmacoeconomics research for the first time this year and found that he really enjoyed it! Nathaniel received a Developing Data-Driven Cancer Researchers (3DCR) Training (T32) grant this year and is a continuing PHRMA foundation fellow. He also served as a TA for PHARM 541, “Pharmacy, healthcare, and society” and has supported the School of Pharmacy as a TA on its ongoing curriculum changes. This summer, Nathaniel will be giving a podium presentation at the International Conference on Pharmacoeconomics and Drug Safety: “Drug survival of targeted therapies for plaque psoriasis: evidence from a large U.S. claims database. He has also been working on his data collection for the discrete choice experiment that makes up one of his dissertation aims. He has provided leadership in developing and delivering a summer "bootcamp" on claims research for industry fellows and interested PhD students. His goal for next year is to finish his dissertation and defend in time for a June graduation.
**Thomas Hopkins, PharmD, MS, 2nd Year Fellow**

Tom is entering his 2nd year of the UW/Bayer fellowship. He joined us from the University of Chicago in Illinois where he earned his PharmD, not far from where he earned his Bachelor’s degree in Biology at Loyola University of Chicago in 2014. This year, Tom worked with Dr. Ryan Hansen as his faculty mentor. As Tom worked his way through his graduate studies, he performed a thorough systematic literature review and developed a full cost-effectiveness model comparing two second-line agents for the treatment of hepatocellular carcinoma. His thesis topic was on the surgical costs associated with the treatment of uterine fibroids and conducted a retrospective cohort analysis of those costs. We wish Tom the best in his second year of his fellowship with Bayer.

**Boshen Jiao, MPH, PhD Student**

Boshen is beginning year two of his PhD program. Through his research experiences in the past year, Boshen increased his interests in methodological issues in cost-effectiveness analysis and values of emerging genetic testing and therapies. Boshen completed his work with Dr. Anirban Basu developing a catalogue of future medical costs in the US. The abstract has been accepted for presentation at the 2019 Society for Medical Decision Making Conference. Boshen also started his research assistantship with Dr. Beth Devine conducting a landscape analysis for sickle cell disease (SCD), and he was part of the Health Tech Fund project with Dr. Dave Veenstra evaluating real world evidence used in clinical guidelines and ICER reports. In addition, he worked with Dr. Ruth Etzioni at the Fred Hutch on a cost-effectiveness analysis of emerging biomarkers in prostate cancer screening. During the past summer, Boshen learned important research skills and interacted with researchers from various fields. Boshen is excited to continue his work with Dr. Beth Devine on the SCD project. He also plans to complete all the coursework and write the short proposal for his dissertation.

**Erik Landaas, MPH, PhD Student**

Erik is entering the fourth year of his PhD program. His short proposal was approved in spring and he looks forward to completing his general exam in autumn quarter. Erik works as the Director of Health Technology Assessment at UW Medicine, which aligns with his dissertation topic. For Erik’s dissertation he will be evaluating the development and effectiveness of a hospital based health technology assessment (HB-HTA) program at UW Medicine. He plans to defend and graduate in spring 2020. Erik received a Department of Global Health student travel grant, which he will utilize for travel to central Thailand to continue his clinical trial work on the PupilScreen phone app. PupilScreen uses smartphone technology and machine learning to detect traumatic brain injury. Erik will conduct study oversight with hospitals in Thailand to ensure good study fidelity. He presented two posters at ISPOR in New Orleans this year, on a health technology assessment of a less invasive bladder cancer test and on incorporating health technology assessment into laboratory medicine at UW medicine. Erik is the outgoing ISPOR student chapter president and we all thank him for his outstanding work in the role.

**Woojung Lee, PharmD, PhD Student**

Woojung is starting her second year at the CHOICE Institute. This summer she has been interning with the Adaptive biotechnologies Market Access Team, where she is studying clinical utility and validity of assessing minimal residual disease in chronic lymphocytic leukemia treatment and building an economic model that examines the economic value of treatment discontinuation. This past year, and continuing through the next, Woojung has provided stellar support to the School of Pharmacy Health Tech Fund (HTF) projects with Dave Veenstra. Their projects aim to see how real-world evidence can be utilized to inform health economic decision making. These experiences have fostered a deeper understanding of RWE, to see how evidences are used to inform payers’ decision.
CURRENT STUDENTS AND FELLOWS continued

making, and to learn how to communicate with payers. She is enjoying the opportunity to explore her interests with our faculty. Her work with the HTF project sparked an interest in robust methods of converting real world data (RWD) into RWE that can be used for outcomes research and regulatory purposes. She has also found interest in examining drug utilization problems with older adults, which led her to work with Dr. Zachary Marcum on dementia prevention during the past year. She presented a poster at ISPOR in New Orleans on some of this work, titled, Do patient Concerns about Antihypertensive Use for Dementia Prevention vary by Current Use of Antihypertensive? For the academic year ahead, Woojung hopes to identify her dissertation topic and work hard on her preliminary exams.

Tricia Rodriguez, MPH, PhD Student
Tricia is entering her third year as a PhD student, and after recently completing her preliminary exams, is gearing up for submitting her short proposal to the CHOICE faculty. Tricia’s dissertation work will focus on developing and assessing the real-world value of a machine learning-based risk prediction model in cystic fibrosis. She is also finishing up her two-year AHRQ T32 training fellowship with Health Services and looks forward to working as an RA with Jennifer Bacci and Peggy Odegard’s on the Gaps in Diabetes Care – Statins (GuIDE-S) Study, a project with the School of Pharmacy Institute for Innovative Pharmacy Practice. She is also working on a WRF fellowship this summer, where we are performing an early stage economic evaluation of a novel treatment for abscess, developed in UW’s applied physics lab. She gave a podium presentation this year at the NRSA confernece in DC on a machine learning approach to predicting mortality for individuals with cystic fibrosis. Her goals for the academic year are to continue finalizing her dissertation short proposal, and take her general exam.

Eddie Neuberger, PharmD, MS, MBA, 2nd Year Fellow
Eddie received his PharmD at the University of Maryland School of Pharmacy and worked for a year in community pharmacy following graduation; during which time he obtained his MBA from the University of Baltimore. He completed his MS at the University of Washington, taking courses including economic evaluation, epidemiological methods, and biostatistics. In addition to coursework, Eddie conducted research regarding cost-effectiveness of a new medication in Lennox Gastaut Syndrome, prevalence of Multiple Sclerosis, and factors associated with initiating therapy in Multiple Sclerosis patients. Eddie is now entering his second year of the UW CHOICE Institute/Genentech Fellowship, where he looks forward to applying his UW training to support Multiple Sclerosis and influenza products on the Genentech Evidence for Access team in South San Francisco.

Enrique Saldarriaga, MS, PhD Student
Enrique is entering the third year of his PhD program. Enrique is interested in examining obesity trends and metrics on a global scale. He presented two posters at ISPOR in New Orleans, one was on the income-elasticity of the body mass index in Peru, and the second was about the cost-effectiveness of a secondary prevention strategy to delay progression of renal replacement theory. This year he received the Stergachis Endowed Fellowship for International Exchange and the South African Centre for Epidemiological Modelling and Analysis (SACEMA) scholarship to attend one of the International Clinics on Infectious Disease Dynamics and Data. Enrique attended the Clinic on Meaningful Modelling of Epidemiological Data, hosted by the African Institute for
Mathematical Sciences in Muizenberg, South Africa. Enrique gained valuable experience at this clinic, which emphasizes the use of data in understanding infectious disease dynamics through modeling projects. Enrique worked with Dr. Anirban Basu this past year on the project “health Mass Index: obesity metrics to reflect health rather than growth”. Over the summer, Enrique is working with Dr. Jessica Jones-Smith from the Department of Health Services, on the Collaborative on Obesity Research and Action (CORA) project, as well as completing an internship at the Institute for Disease Modeling (IDM) Health Economics division. Enrique served on the CHOICE annual retreat this year and is the incoming ISPOR chapter president. This year, he plans to define his dissertation topic and committee and get his proposal approved.

Naomi Schwartz, MPH, PhD Student

Naomi joined us last year after completing her MPH in Epidemiology from the University of Washington. As she enters her second year of the PhD program, her goals are to continue completing her core courses, to begin her dissertation planning work and continue serving as one of the two inaugural CHOICE student representatives, a new initiative created this year to enhance the student experience, as well as ensuring student voices are brought to the table at our quarterly CHOICE faculty meetings. Naomi presented a poster at the American Society of Clinical Oncology this spring titled, “Is neratinib following trastuzumab in early-stage HER2-positive breast cancer cost-effective?”. Naomi was an AHRQ T32 fellow this past year and transitioned from this fellowship to an exciting internship opportunity over the summer at Seattle Genetics with CHOICE alum, Zsolt Hepp, Associate Director of Health Economics Outcomes Research (HEOR). She will lead a project utilizing Seattle Genetics’ new data analytics platform to conduct health economics and outcomes research using claims and electronic health record data. The project will support HEOR evidence generation for a Seattle Genetics late-stage asset. In the fall, she will be working with Shelly Gray’s alzheimers research, in developing a research plan to use Adult Changes in Thought (ACT) data to examine the association between anticholinergics and physical performance.

Lauren Strand, MS, PhD Student

Lauren is entering her fourth year in the PhD program. Lauren’s dissertation topic examines cannabis as a substitution for prescription drugs, and she will research longitudinal trends in the new era of legal cannabis. This year, Lauren served as the graduate student representative to the CHOICE admissions committee, editor for the CHOICE student blog, ISPOR student chapter treasurer, and is the Vice President of the Washington Yacht Club Vice Commodore. She has been working as a TA for the CHOICE Institute’s Health Economics Online Certificate program. Over the summer Lauren has been updating course content for the HECON certificate and serving as a Washington Research Foundation fellow. She attended the National Bureau of Economics Research (NBER) Health Economics Bootcamp in 2018. For the upcoming year, Lauren’s goals are to pass her general exam, attend a substance use conference, and get sailing certifications.

Jamie Ta, PharmD, MS, 2nd Year Fellow

Jamie is entering her 2nd year of the UW/Allergan fellowship. Prior to the fellowship, she received her BS and PharmD from the University of California, San Diego. During the first year of the fellowship, Jamie worked on various research projects in Major Depressive Disorder. For her master’s thesis at UW, she used IBM MarketScan Databases to assess adherence, healthcare resource utilization, and costs among patients treated with antidepressants. Additionally, she presented work in collaboration with UW and Fred Hutch faculty as a poster at the AMCP Nexus 2018 Meeting and a forum presentation at the ISPOR 2019 Annual Meeting. Jamie is excited to join the Allergan team and apply her training at UW to support pipeline and marketed products at Allergan.
Wei-Jhih Wang, MS, PhD Student
Wei-Jhih is beginning year five of her PhD program with the CHOICE Institute. She successfully defended her dissertation proposal this past year, which is titled Mimicking clinical trials using real-world data - A novel method and applications. This past year Wei-Jhih worked with Professor Anirban Basu as a Research Assistant on the Value of Information project. She presented two posters at ISPOR in New Orleans, “A Novel Method for Assessing Feasibility of Generating Real-World Data Based Control Groups” & “Assessing the Generalizability of Clinical Trials Without Individual-Level Trial Data”. This summer, Wei-Jhih is working with Genentech’s technical institute team in San Francisco as an intern. The summer internship provided her with a better understanding of HEOR from an industry perspective, and it was a great opportunity to learn how to link academia work to the industry setting. For the upcoming year, Wei-Jhih is planning to keep working on her dissertation and graduate. She will also continue working, present at conferences, and finish several projects with CHOICE faculty, including examining the availability of clinical trials with Aasthaa Bansal and meta-analyzing count events over time using convoluted Poisson model with Anirban Basu.

Sabra Zaraa, PharmD, MPH, PhD Student
Sabra is beginning her second year of the PhD program, after joining us from the UW department of Global Health where she earned her MPH as a Fulbright scholar. She has been working with the Institute for Health Metrics and Evaluation since starting with CHOICE, which has enabled her the opportunity to collaborate on many cutting edge projects, including developing a frailty index for the IHME Antimicrobial Resistance, Global Burden of Disease project with Georgios Kotsakis. Sabra serves as the project’s data analyst for this project and their work is contributing to capturing the burden of disease in older populations globally. She has also been working with the Saudi Arabian Ministry of Health, conducting readiness and service availability assessments of hospitals and health centers which serve pilgrims in Mecca, Saudi Arabia. Sabra was co-PI of a grant awarded for UW Population Health to study integrated care models for people living with epilepsy (highlighted later in this report). She looks forward to continuing her work in year two of the PhD program, as well as narrowing in on a dissertation topic.
CURRENT POST-DOCTORAL FELLOWS

Kritee Gujral, MA, PhD
Kritee joined the CHOICE institute as the NHLBI senior post-doctoral fellow in May 2018. She completed her Ph.D. in Economics at the University of Florida, and holds undergraduate degrees in Mathematics and Economics, with minors in Statistics and Religion. Prior to arriving at UW, she worked as a transfer pricing tax analyst in San Jose, CA. She has also worked as a researcher at the Institute of Child Health Policy in Gainesville, Florida and in the non-profit sector in Mysore, India, estimating corruption-related leakages in the state's food subsidy system. Kritee is passionate about contributing to societal improvements and having real-world policy impact.

Her primary research interests are Applied Microeconomics, Public Economics, Health Economics, Bargaining and Online Markets. Her Health Economics research identifies channels of improvement in healthcare service delivery. This past year, her research focused on analyzing racial disparities in diabetes outcomes, and the adverse impact of rural and urban hospital closures on patient mortality. Her work was presented and appreciated at the VanHEM 2019 conference. During this year, she also trained in Value of Information (VOI) analysis and seeks to apply these methods for better healthcare decision-making. She also aims to build on her prior work by studying the impact of health system changes, such as hospital closures and mergers, for other vulnerable populations.

Aig Unuigbe, MA, MPhil, PhD.
Aig is currently the Pfizer Senior Postdoctoral Fellow. During his first year at CHOICE he has collaborated with colleagues at the Institute on projects evaluating varying propensity score methods and on approaches to reconcile cost effectiveness methods such as Augmented Cost Effectiveness Analysis (ACEA) and Multi-Criteria Decision Analysis. He has also engaged in research exploring the factors related to the life cycle of products in the generic drug market. In addition, he has continued existing work exploring the impact of health policies on the behavior and financial outcomes of individuals and households. He has enjoyed interacting with the faculty and students at the Institute and learning more about their diverse research interests.

Aig will spend the second year of the fellowship at the Pfizer New York City campus where he will work on real world data analysis questions and other projects under the supervision of his mentor Cristina Masseria. He will also continue his research on propensity score methods and other collaborations with colleagues at the CHOICE Institute. He is looking forward to this transition.
In May, CHOICE faculty, students, and staff gathered at the Washington Park Arboretum for our annual retreat. This retreat is a unique opportunity to take a break from our busy schedules, spend the day together, and put forth a focused effort on reflecting and looking ahead as an Institute.

This year’s theme was “Strategic Thinking”, aligns with our upcoming 10-year graduate program review. Dean Sean Sullivan provided a history of CHOICE/PORPP and updated us about the School of Pharmacy’s strategic plan process. This led us into one of our main activities of the day, a SWOT Analysis. We split into groups based on those four categories: Strengths, Weaknesses, Opportunities, Threats.

Having all hands-on deck working through this was incredibly valuable to the finalization of our strategic plan and some issues are already being addressed and ideas being put into motion. One identified need was for a claims data and R coding bootcamp that would take place over the summer, so new students can be brought up to speed before beginning their studies. In response, three PhD students have created and are teaching a curriculum for this bootcamp over the summer for our new industry fellows. We look forward to utilizing and improving this as a regularly offered resource for new students. Our strategic plan will be finalized and published in the fall on our website.

We also hosted an invited guest speaker: Career Coach, Elizabeth Atcheson, who gave a presentation on Career Planning and Strategy, an identified student need. This was another theme that had arisen as a student need during our strategic planning efforts.

By mid-afternoon, we were ready to get moving. Fortunately, our outstanding retreat committee members Enrique and Lizzy had an HEOR photo scavenger hunt planned for us. How else
could a health economist enjoy a botanical garden, but to do so while acting out “moral hazard” and “diminishing returns” in photo form?

To end the day we enjoyed some delicious tacos from Taqueria Los Chilangos at our social reception. Thanks to all whose families, friends, partners, and dogs were able to join us for the fun! It was certainly a day to remember and couldn’t have been the success it was without the efforts of the retreat planning Committee: Josh Carlson, Marina Gano, Lizzy Brouwer, and Enrique Saldarriaga.
In March, we were fortunate to welcome Professor Emeritus Charles E. Phelps, PhD, for our annual symposium. Dr. Phelps provided an overview of multiple-criteria decision analysis (MCDA) methods. He discussed how to use MCDA in a budget-constrained decision context, and demonstrate potential uses for individuals. The seminar concluded with an exercise using alternative group choice mechanisms and a discussion of their merits. We enjoyed a reception following the symposium with good food and company.

Charles E. Phelps started his career at the RAND Corporation, working from 1971-1984, when he joined the University of Rochester as a professor and director of the public policy analysis program. He later became the provost of the University of Rochester until his retirement. He is an expert on health and health care economics. Dr. Phelps met with our students during his visit, a fantastic opportunity for them to network with and engage in discussion with such a leader in our field. Thank yous go out to Professor Emeritus Lou Garrison for helping coordinate Dr. Phelps’ visit in Seattle and of course to Dr. Phelps himself. We look forward to our third symposium next year as we continue to develop this annual event!

“"The CHOICE Institute was delighted to host Professor Emeritus Charles Phelps as the keynote speaker for the CHOICE Annual Symposium. Professor Phelps discussed alternative methods and challenges to conduct multi-criteria decision analysis and took the audience through a hands-on exercise. Understanding these tools is important for engaging with health technology assessment bodies and helping them develop a transparent assessment process when desired.”

ANIRBAN BASU, PROFESSOR AND STERGACHIS FAMILY ENDOWED DIRECTOR, THE CHOICE INSTITUTE.
This has been an exciting year for our PharmD/MS industry fellowship programs. What once began as one Allergan fellowship per year, has expanded tremendously and for the better. This year we are pleased to unveil our Seattle Genetics PharmD/MS fellowship program and our largest PharmD/MS fellow cohort yet. We now have fellowship programs with the following companies:

- Allergan (2 fellows)
- Bayer (1 fellow)
- Genentech (2 fellows)
- Seattle Genetics (1 fellow)

As our network of alumni grows, as does our distinction as a leader in health economics and outcomes research training and graduate education. We are thankful for the strong partnerships maintained through these training programs. We are committed to ensuring a quality experience for our fellows and to recruit top candidates. We have newly appointed Dr. Ryan Hansen, PharmD, PhD, as the Director of Industry Fellowships. This is an important new role which will contribute to the success of our fellowship programs and industry partnerships. We look forward to seeing the meaningful work Dr. Hansen will do in this role in the upcoming year.
CHOICE Institute Assistant Professor Ryan Hansen PhD, PharmD has enjoyed a broad research portfolio since he joined our faculty in 2012. Dr. Hansen’s research has focused on Comparative Effectiveness, Safety, and Value evaluations, publishing over 50 peer-reviewed manuscripts in this area of research. His work in comparative effectiveness has spanned a broad range of clinical areas including neurology, solid organ transplant, post-surgical pain, chronic pain, dentistry, pulmonology, and oncology. Dr. Hansen’s value assessment portfolio has included cost-effectiveness, burden of illness, and budget impact analyses across many clinical areas. This past year he joined the UW collaboration with the Institute for Clinical and Economic Review, and serves as the lead investigator of a research team with Dr. Greg Guzauskas. This team most recently has focused on modeling new treatments for peanut allergy and also a novel oral treatment for insulin dependent diabetes mellitus.

Dr. Hansen’s research program has continued to curate a 15-year longitudinal database of motor vehicle crashes from the Washington State Department of Transportation linked with Kaiser Washington medical records in order to evaluate the associations between motor vehicle crashes and both medical conditions and medications. Motor vehicle crashes remain a constant public health threat, and one that is influenced greatly by medical conditions and pharmaceutical treatments. In the U.S. alone there are over 6.4 million crashes per year, causing over 40,000 deaths and an overall cost of approximately $871 billion dollars per year. Along with collaborators from the Kaiser Permanente Washington Health Research Institute, including Drs. Sascha Dublin and Gaia Pocobelli, statisticians Mary Akosile and Robert Wellman, Dr. Hansen recently completed an evaluation of the association between obstructive sleep apnea and crashes.

In addition to serving on our faculty, Dr. Hansen is also a practicing pharmacist and has leveraged his experience in community pharmacy to collaborate in research that evaluates innovative approaches to improve the health care system. Dr. Hansen recalls that his first experience with pharmacy practice research came through a collaboration with Drs. Beth Devine and Tom Hazlet, evaluating medication errors associated with the implementation of electronic prescribing. Since then, Dr. Hansen has been involved in evaluations of novel risk reduction initiatives to increase access to naloxone among individuals at risk of an opioid overdose, and also, in collaboration with Department of Pharmacy Faculty Dr. Jennifer Bacci and Dr. Peggy Odegard, and CHOICE Faculty Dr. Andy Stergachis, an evaluation of a new approach to increasing rates of adult immunizations through access at community pharmacies. Additionally, over the past two and a half years, Dr. Hansen has served as the Faculty Director of the UW Rubenstein Memorial Pharmacy at the UW Hall Health Primary Care Center. In this administrative role he provides leadership and oversight to the primary on campus pharmacy that serves our UW students, faculty, and staff.
Dr. Hansen is also a respected mentor to our graduate students, being nominated this year for the School of Pharmacy Outstanding Mentor Award. Although he was not selected, this speaks volumes to the impact he has on students. Thank you, Dr. Hansen, for enriching the student experience and inspiring growth through your mentorship.

“When I was still struggling to articulate my dissertation aims, I started meeting with Ryan to discuss some abstract ideas. Ryan made time to meet with me weekly in order to flesh out those ideas into concrete dissertation aims, in addition to suggesting other faculty and professionals that might assist in my dissertation development. His feedback consistently pushed me to think more critically while still validating and celebrating my ideas. These low-pressure weekly conversations were an invaluable source of confidence and motivation in moving my dissertation forward. He goes above and beyond what is expected to help students navigate the academic portion of their careers.”

ELIZABETH BROUWER, 5TH YEAR PHD STUDENT

“Ryan is a skilled mentor. He is extremely available and open, providing a solid balance of advising and support while encouraging independent thought. He also goes above and beyond to connect students to valuable resources.” – Lauren Strand, 4th year PhD student.
HEALTH ECONOMICS CERTIFICATE PROGRAM UPDATE

The Certificate in Health Economics and Outcomes Research program is entering its 8th year. Last academic year featured two separate cohorts, including a large group of health ministry students from Saudi Arabia. Launched at the start of the 2012-2013 academic year in conjunction with the UW Professional and Continuing Education program, the distance learning program has trained over 400 students in a wide range of health care settings including payer organizations, health insurance industry, government, pharmaceutical and biomedical industries. 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 state-of-the-art 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 remained positive over the years. Applications have routinely been 40+ since the beginning of the program. The program also 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 CHOICE teaching assistant positions each year.

PACIFIC NORTHWEST EVIDENCE BASED PRACTICE CENTER (PNW EPC)

Beth Devine and John Gore are the Assistant Directors and site principal investigators of the AHRQ-funded Pacific Northwest Evidence-based Practice Center (PNW EPC) who, along with Paul Kraegel, UW EPC Program Manager, coordinate EPC projects across the three partner institutions: Oregon Health & Science University, the University of Washington CHASE Alliance, and Aggregate Analytics, Inc. The UW joined the EPC program in 2013 and to date has participated in seventeen projects and twenty-five associated publications. The projects range in scope from evaluation of medication-assisted treatment programs to risk assessment, genetic counseling, and genetic testing for BRCA-related cancer. One current project features a large systematic review of opioid treatments for acute pain. Another project is updating a systematic review on the topic of noninvasive nonpharmacological treatments for chronic pain. Since joining the EPC, the UW has received over $1.5 million in flow-through funding from AHRQ. Numerous CHOICE faculty have led and participated in EPC projects. These include Joseph Babigumira, Josh Carlson, Ryan Hansen, Scott Ramsey, Sean Sullivan, and numerous colleagues from the UW Schools of Medicine and Public Health.
The University of Washington School of Pharmacy (UWSOP) and the Institute for Clinical and Economic Review (ICER) formed a partnership in 2016 leveraging UWSOP’s expertise in economic modeling of pharmaceutical interventions to support ICER’s growing body of work in new drug assessments. The current UW team is comprised of faculty (Josh Carlson (PI), David Veenstra, Anirban Basu, and Ryan Hansen), and staff scientists (Greg Guzauskas and Lisa Bloudek). To date we have completed or are working on economic evaluations on 12 topics: peanut allergy (2019), multiple myeloma (2016), non-small cell lung cancer (2016), 2 in plaque psoriasis (2016 and 2018), relapsing remitting multiple sclerosis (2017), secondary progressive multiple sclerosis (2019), atopic dermatitis (2017), osteoporosis (2017), RPE65-mediated inherited retinal disease (2018), Hemophilia A (2018), prostate cancer (2018), and hereditary angioedema (2018). Our work has been disseminated at ICER public meetings, as part of ICER’s full topic reports, in conference proceedings (6 abstracts), and in peer reviewed journals (5 published, 2 in development).

In our two most recent evaluations, we presented on siponimod for secondary progressive multiple sclerosis and technologies to induce immune tolerance immunology as treatments for peanut allergy. These reviews included our model validation and transparency program where manufacturer stakeholders are able to review and provide comments on the model during the ICER draft report review period under a limited usage agreement.

For the siponimod analysis, Lisa Bloudek presented work done with Josh Carlson at the Midwest Comparative Effectiveness Public Advisory Council (CEPAC) in Chicago, IL. They found that it was not cost-effective versus no treatment in the base case for the overall population of patients with secondary progressive multiple sclerosis, nor in the subgroup of patients with relapses in the past 2 years—a proxy for active secondary progressive multiple sclerosis.

Greg Guzauskas presented work done with Ryan Hansen at the California Technology Assessment Forum (CTAF), in Oakland, CA. Their work provided estimates for the annual cost at which two immunotherapies (AR101 and Viaskin® Peanut) would reach cost-effectiveness thresholds ranging from $50,000 to $150,000 per QALY gained compared to peanut avoidance alone. Based on analysts’ estimated prices, AR101 was estimated to be cost-effective while the incremental cost-effectiveness ratio for Viaskin Peanut fell above the $150,000 per QALY threshold. In a scenario analysis considering societal costs, both may be cost-effective versus peanut avoidance. Ultimately, the long-term cost-effectiveness of AR101 or Viaskin Peanut is dependent on the prices at which they come to market.

In summary, our collaboration with ICER continues to yield positive returns in terms of research productivity, contributions to timely and impactful conversations about the value of emerging products in the U.S., and a voice in the continuously evolving discussion about how to best measure the value for money of innovative medical and pharmaceutical treatments. We are looking forward to evaluating the model transparency effort, as well as developing and testing alternative approaches to measuring health outcomes.
When the Master of Science in Biomedical Regulatory Affairs (BRAMS) program launched in 1998, the intended applicant pool was healthcare industry quality/regulatory professionals interested in a part-time, in-person, evening program. It soon became clear that a full-time option was necessary, both permitting students to specialize in an area of interest through additional courses, e.g., Chemistry, Manufacturing and Control (CMC) statistics, pharmacoepidemiology, medical biometry, and satisfying visa requirements for international students. BRAMS has received STEM (science, technology, engineering, and mathematics) designation, allowing qualified F-1 holders to participate in optional practical training (OPT). The full-time, Applied, program was approved in 2018 and the first full-time student graduated this year.

Thirteen students graduated with a master’s degree from the BRAMS program in the 2018-19 academic year. Their practicum topics included:

- Strategic regulatory development plan for clinical trial transparency activities
- Development of an eCopy style guide and regulatory intelligence repository for Premarket Approval submissions
- Development of an IRB application for an industry-sponsored cardiology clinical trial
- Updating post market surveillance processes for a device company: Compliance with EU MDR Regulation (EU) 2017/745
- Transitioning from paper Investigational New Drug submissions to the electronic Common Technical Document format
- Identifying requirements for an Investigator-initiated IND submission and a pre-IND meeting for a vaccine
- Comparing the application requirements and processes for initiating clinical trials between the United States and Belgium.
- Development of an informed consent form in compliance with the University of Washington Institutional Review Board requirements
- Annual review of commercial product investigator’s brochure, product-level, and study-level documents
- Improving the informed consent and promotional material of an observational study involving vulnerable populations
- Regulatory practices associated with post-Premarket Approval product changes
- Review of the UW Biomedical Regulatory Affairs Master of Science (BRAMS) program
- Establishing a pathway and communicating with FDA for a novel cell therapy

With BRAMS’ STEM approval, most of the international students have begun taking advantage of local industry “Curricular Practical Training” internship opportunities. BRAMS has received repeated requests for an on-line version and the Statistical Topics for Biomedical Regulatory Affairs Professionals will be available on-line for the Winter 2020 session.
Dr. Marcum was recently awarded the Paul B. Beeson Emerging Leaders Career Development Award (K76) from the National Institute on Aging (NIA) and The John A. Hartford Foundation. Dr. Marcum is the first pharmacist to receive the grant, which is typically awarded to physician-investigators. This initiative is focused on clinically trained, early-stage investigators who take an active leadership role in creating transformative changes that will lead to improved health care outcomes in the field of aging and geriatrics research.

Zach’s research looks at whether certain blood pressure medicines are protective against dementia. Mounting evidence suggests that certain antihypertensives may reduce one’s risk of dementia if taken during mid-life.

This research is important as there are currently no disease-modifying treatments for dementia. Finding preventative therapies like these already-approved medications may help stave off dementia and could offer a new preventative option for people at risk for dementia.

This 3-year, approximately $700,000 grant, will investigate the association between long-term antihypertensive use and brain health, including Alzheimer’s disease and other dementias.

Congratulations Dr. Marcum!
Aasthaa Bansal is leading an interdisciplinary team to carry out research and create tools that seek to shift the paradigm for how routinely-collected patient information is used for clinical management, by innovatively coupling data-adaptive prediction modeling with statistical decision theory.

This decision-making framework will evaluate the value of future clinical information and guide patient-level decisions about the optimal frequency of surveillance testing, while taking into account a patient’s evolving risk of recurrence. “As a patient’s information changes, if they go from low to high risk, for example, their follow-up recommendations will also be updated in this dynamic decision-making framework,” said Aasthaa.

Despite receiving effective primary treatment, many cancer survivors remain at risk of relapse and associated morbidity and mortality. Surveillance testing using biomarkers and imaging may detect disease recurrence before clinical symptoms manifest and allow for early treatment.

Current guidelines recommend frequent testing in most cancer settings. However, frequent testing involves trade-offs. Many patients are at low risk of experiencing recurrence, and the complications and costs of frequent tests are not justified for these patients. Experts have cautioned against over-testing and advocated for risk-based strategies using the personal clinical history of each patient to provide better tailored care to cancer survivors. Although there is growing recognition that a one-size-fits-all strategy of frequent patient visits may be suboptimal, there is ambiguity regarding how best to tailor surveillance to individual cancer survivors.

“As more people beat cancer, providers need better tools to help them understand the relative costs and benefits of alternative surveillance strategies and provide more personalized follow-up care to cancer survivors.”—Associate Professor Aasthaa Bansal, The CHOICE Institute

Her team includes CHOICE Professors Anirban Basu and David Veenstra, as well as researchers from UW Biostatistics and Medicine, Fred Hutch, and Kaiser Permanente Southern California (KPSC). The framework will be implemented on electronic health record data from KPSC, utilizing rich patient-level information, such as disease history, lab results, and comorbidities in order to inform risk and guide decision-making, which could lead to major advances in personalized medical decision-making. The focus of this grant will be to apply the framework to colorectal cancer, prostate cancer and chronic myeloid leukemia. However, the
general methodology developed by the research team could be applied to any disease setting where ongoing surveillance is a major component of patient care. “We are creating an approach that we plan to extend to other diseases, including pediatric cancers, where similar open questions exist,” reflected Aasthaa.

The NIH deemed her project so significant, they granted the team $2.2M for 5 years and up to 2 additional years of funding through a Method to Extend Research in Time (MERIT) Award. MERIT Awards provide long-term grant support to investigators whose research competence and productivity are distinctly superior and who are highly likely to continue to perform in an outstanding manner, according to the NIH.

In 2016 and 2017, only eight MERIT awards were granted each year across all of NIH.

The National Cancer Institute of the National Institutes of Health funded this R37 grant (1R37CA218413-01A1) for $2.2M.
The University of Washington School of Pharmacy (UW SOP), in partnership with our Corporate Advisory Board (CAB), launched the Program in Policy Research for Health Technologies (Health Tech Fund) in 2007 as a public-private collaboration designed to fulfill the CHOICE Institute’s mission; and to respond to industry interests in value-based benefit design, coverage, reimbursement, and product valuation for the medical products industry. The ultimate goal of the Health Tech Fund is to further the mission of CHOICE. Since 2007, Health Tech Fund projects have evaluated performance-based risk sharing agreements, the value of HEOR, paying for cures, and quality and prioritization of evidence; 14 papers have been published and 12 graduate students and post-docs have been supported.

This year’s Health Tech Fund Project: The Impact of Real-World Evidence on Health Technology Assessments and Its Value to Payers was funded with support from 15 industry partners. The Food and Drug Administration (FDA) released guidance in June 2018 on how the pharmaceutical industry may communicate health care economic information (HCEI) and real world evidence (RWE) to payers. By placing a focus on the role of RWE in informing payers’ decision making, it is likely to encourage companies to communicate more data about the “real-world” impact of drugs. The goal of this project is to examine the impact RWE has in health technology assessments (HTA) in the US and the value payers place on RWE within the context of HTA. The impact of this work will include providing HEOR groups with a better understanding of the landscape of RWE within the context of HCEI communication, insight regarding the impact and value of RWE in the marketplace, and a framework to communicate the value of RWE internally.
The Program in Health Economics and Outcomes Methodology (PHEnOM) at The CHOICE Institute is a joint program with the Department of Health Service in the School of Public Health. The program aims to facilitate intellectual activities within the departments in the fields of health economics, econometrics and methodology development in outcomes research and to engage researchers in allied fields around the city of Seattle. This year we are excited to have Drs Doug Barthold and Jerome Dugan take the lead in organizing this seminar series as co-Directors. We look forward to what they have in store for us!

**Doug Barthold, PhD**, joined CHOICE in 2018 as a Research Assistant Professor. He came to us from the University of Southern California where he was a post-doctoral scholar with the Schaeffer Center for Health Policy and Economics. Doug received his BBA in Management, Economics and Mathematics in 2007 from the University of Massachusetts, Amherst, MA and then received his PhD. in Economics in 2015 at McGill University in Montreal, QC. Doug is interested in the relationships between health policies, health care utilization, and health outcomes, especially in the pharmaceutical sector.

**Jerome Dugan, PhD**, is an Assistant Professor in the department of Health Services. He is the Leo Greenawalt Endowed Assistant Professor in Health Policy. He came to us from Drexel University, where he was an Assistant Professor. He got his PhD in Economics from Rice University. His interest are in health insurance status and the organization of the healthcare system impacts on healthcare cost and quality.

As first order of business, Dr. Barthold and Dr. Dugan are excited to introduce one of the first speakers for the seminar series for the year ahead:

**Dr. Ellen J. Bass**, Professor and Chair of the Department of Health Systems and Sciences Research in the College of Nursing and Health Professions at Drexel University. Dr. Bass also holds a joint appointment in the Department of Information Science in Drexel University’s College of Computing and Informatics. She also holds affiliate status in Drexel University’s School of Biomedical Engineering, Science and Health Systems. Bass has over 30 years of human-centered systems engineering research and design experience in multiple domains including air transportation and health care.

The focus of her research is to develop theories of human performance, quantitative modeling methodologies, and measures that can be used to evaluate human-automation interaction and human-human coordination in the context of total system performance. Bass holds a Ph.D. in Industrial and Systems Engineering from the Georgia Institute of Technology, an M.S. in Advanced Technology from the State University of New York at Binghamton, a B.S.Eng. in Bioengineering from the University of Pennsylvania, and a B.S.Econ. in Finance from the University of Pennsylvania.

**Dr. Bass will be presenting at PHEnOM on Wednesday, October 30, 2019, at 3:30 pm in the Dept of Pharmacy Conference Room, H371.**
Thank you to all those who joined us in New Orleans at our annual social reception! It was so great to connect with alumni and friends. We had great representation at ISPOR this year by CHOICE students, faculty, and alumni. Our connection with ISPOR is not limited to attending conferences. We have an active student ISPOR chapter. We thank Erik Landaas for his great work leading the chapter in 2018-19 and are pleased to welcome incoming president, Enrique Saldarriaga. With that said, here are some highlights from the May conference and our social reception. See you in Orlando in 2020!

**Short Courses:**

**Risk Sharing/Performance-Based Arrangements for Drugs and Other Medical Products**
*Faculty:* Louis P. Garrison, PhD, University of Washington, Seattle, WA; Adrian Towse, MA, MPhil, Office of Health Economics, London, UK; Josh Carlson, MPH, PhD, University of Washington, Seattle, WA

**A Health Economics Approach to US Value Assessment Frameworks**
*Faculty:* Richard J. Willke, PhD, ISPOR, Lawrenceville, NJ; Louis P. Garrison, PhD, University of Washington, Seattle, WA; Charles E. Phelps, PhD, MBA, University of Rochester, Gualala, CA

**Tools for Reproducible Real-World Data Analysis (NEW)**
*Faculty:* Carrie Savage Bennette, MPH, PhD, Flatiron Health, Seattle, WA; Blythe Adamson, PhD, MPH, Flatiron Health, New York, NY; Joshua Kraut, MS, Flatiron Health, Seattle, WA

**Cost-Effectiveness Analysis Alongside Clinical Trials**
*Faculty:* Scott D. Ramsey, MD, PhD, Fred Hutchinson Cancer Research Center and University of Washington, Seattle, WA; Richard J. Willke, PhD, ISPOR, Lawrenceville, NJ

**Panel sessions:**

**The Controversial QALY: Is There a Middle Ground in the Debate?**
*Moderator:* Jennifer Bright, MPA, Innovation and Value Initiative, Alexandria, VA *Panelists:* Lou Garrison, PhD, University of Washington, Seattle, WA; Eleanor M. Perfetto, PhD, MS, National Health Council, Washington, DC; Anna Kaltenboeck, MA, Memorial Sloan Kettering Cancer Center, New York, NY

**Net Health Benefit™ - Asco vs. I.C.E.R. Value Frameworks: Are We Talking About The Same Thing?**
*Podium Presentation by Jamie Ta, UW/Allergan Postdoctoral Fellow*

**Real Option Value for Drugs: Is It Really an Option?**
*Moderator:* Adrian Towse, MA, MPhil, Office of Health Economics, London, UK
*Panelists:* Meng Li, PhD, ScM, University of Southern California, Los Angeles, CA; Jens Grueger, PhD, University of York, Heslington, York, UK

**Educational Symposium:**

**The Evolution of HTAs: What Matters Most?**
*Sponsored by:* Amgen
*Moderator:* Anusha Kheir, MPH, Amgen, Thousand Oaks, CA
*Speakers:* Louis P. Garrison, PhD, University of Washington, Seattle, WA; Felicity McNeill, PSM, Hepatitis Australia, Woden, ACT, Australia; Gordon G. Liu, PhD, Peking University, Beijing, China
NATHANIEL HENDRIX
2019 Recipient of the UW School of Pharmacy, Outstanding Student Leadership Award

Nathaniel is a fifth-year PhD candidate at The CHOICE Institute, which he joined after completing his PharmD at UW. His dissertation is on using the tools of health economics such as outcomes modeling, and discrete choice experiments to solve translational issues around the integration of artificial intelligence-based tools into clinical practice, and using big data to estimate resource use. Nathaniel’s other research interests include attitudes toward uncertainty in diagnostics and personalized medicine and improving the cost-effectiveness of cancer screening. Nathaniel is a natural leader and scholar. He has organized and trained for junior students in cost-effectiveness modeling and claims analysis, has received two T32 training grants, a pre-doctoral fellowship in outcomes research from The PhRMA Foundation, and is the 2019 recipient of the the UW School of Pharmacy’s Outstanding Student Leadership award. In addition to his studies, Nathaniel has worked as a health economics consultant for the pharmaceutical industry, professional organizations, and global health non-profits.

Nathaniel’s dissertation chair, Dr. Dave Veenstra, was one of his nominators for the leadership award. Dave notes that Nathaniel is extremely bright, creative, and productive. Of Nathaniel, he highlights how he “identified his dissertation topic on the use of AI in breast cancer screening on his own, reached out to collaborators at Kaiser and SAGE Bionetworks, and recruited a robust dissertation committee. He also served as the primary cost-effectiveness modeler for a national technology evaluation with ICER, a position typically reserved for senior scientists.”

One of Nathaniel’s greatest contributions to the CHOICE Institute is his founding of the CHOICE student blog, Incremental Thoughts.

“Many of the most important conversations in health economics now take place online. As I began to learn enough about our field to participate in some of these conversations, I saw the influence that an active online presence can have. Through Twitter, blogs, and other social media, I saw researchers expanding the reach of their work by offering brief, reader-friendly summaries of their publications and commentaries on others. This is why, when I became president of our ISPOR student chapter during my third year, I decided to use this as an opportunity to create a blog of our own. My goal in doing this was to provide a platform for students to share insights from their own work, provide tutorials on methods that they were learning, and comment on aspects of student life in a health economics program. With the help of several collaborators, I launched the blog in January 2018.” -Nathaniel Hendrix, PharmD, PhC

Graduate program director, Dr. Beth Devine, reflected on the important role Nathaniel plays as a leader among our students. He is a go-to-person when a new perspective is needed to tackle research questions and he is always eager to brainstorm with his colleagues and peers. Nathaniel utilizes his own experiences to support his fellow students to advance their careers. As a recipient of the PhRMA Foundation Pre-Doctoral Fellowship in Health Outcomes in 2018 he helped several student colleagues develop their applications this year.

In summary, Nathaniel has been a tremendous asset to the CHOICE PhD program, and an exemplary student leader. He combines curiosity about research methods with a devotion to helping those around him develop as scholars. Nathaniel plans to defend his dissertation and graduate this upcoming academic year.

Check out how Nathaniel’s contribution keeps growing, at our student blog, Incremental Thoughts: https://choiceblog.org/
LAUREN STRAND
Named 2019-2020 UWSOP Magnuson Scholar

Congratulations to third-year PhD student in the CHOICE Institute, Lauren Strand who was named the UWSOP Magnuson Scholar for 2019-2020. Magnuson Scholars are selected for their excellent academic performance and outstanding potential for research in the health sciences; they receive $30,000 to support their research, education, and training.

Originally interested in studying prescription drugs of potential abuse from the public health perspective, Lauren has become fascinated by the economic underpinnings of prescription drug use and abuse. For her dissertation, she will investigate the relationship between recreational cannabis policy/roll-out and prescribing in the state of Washington and in several other legalizing states.

She will focus on putative “substitutable” classes of drugs such as opioids. If there is evidence of substitution occurring over time, for future study she is interested in how such real-world patterns of prescription drug substitution could relate to negative overdose outcomes such as hospitalization and death.

While this research area is challenging and fast-paced, she hopes her findings might help inform future initiatives in Washington and other states.

We are so proud of you, Lauren! Congratulations on this significant award and recognition for your research.
Congratulations to the 2019 winners of the Louis Sr. and Marilyn Garrison Endowed Prize in Health Policy and Economics, Elizabeth Brouwer (4th year CHOICE PhD student) and Gilbert Ko (3rd year PharmD/MBA student)!

CHOICE Professor Emeritus, Dr. Lou Garrison, is seen here presenting Lizzy with the award, named in honor of his parents, at the CHOICE Annual Retreat.

This year’s prize was awarded to both Lizzy and Gilbert for their impressive papers: “Implicit Adoption of Cost-Effectiveness-driven Value-Based Formularies in Private Health Insurance 2010-2013,” authored by Elizabeth D. Brouwer, Anirban Basu, John Watkins, Kai Yeung and Gilbert’s paper, “Gene Therapy for Hemophilia A: Value-Based Pricing.”

Congratulations, Gilbert and Lizzy!
BACCI, WHITE, AND ZARAA AWARDED UW POPULATION HEALTH GRANT TO STUDY INTEGRATED CARE MODELS FOR PEOPLE LIVING WITH EPILEPSY

Congratulations to Jennifer Bacci, Assistant Professor, Department of Pharmacy; H. Steve White, Professor and Chair, Department of Pharmacy; and Sabra Zarāa, CHOICE PhD student, Pharmacy on receiving one of the 2019 pilot research grants awarded by the UW Population Health Initiative. The interdisciplinary team’s project is titled, “Community pharmacist integrated population health management of people living with epilepsy.”

Epilepsy is a complex spectrum of seizure disorders, affecting approximately 3.4 million people nationally and 75,000 people in Washington state; and the number is increasing. It affects quality of life and leads to significant health and socioeconomic disparities. The experiences of a person with epilepsy involves managing multiple co-existing health conditions and taking anti-seizure drugs, the mainstay of treatment that are often accompanied by significant adverse effects. Yet, healthcare and community services are often fragmented and uncoordinated.

Community pharmacists are among the most accessible and trustworthy healthcare providers with extensive knowledge of drug therapy, yet are seldom leveraged to fill the gaps in epilepsy care or many other non-communicable diseases. Community pharmacists educate patients about their disease, ensure dosing accuracy, monitor for side effects and drug interactions, and encourage medication adherence. At a population level, community pharmacists collaborate with other healthcare providers and assess medication use patterns and patient outcomes data to ensure medications are used effectively, safely, and in a cost-effective manner. No models exist for engaging community pharmacists in population health approaches to epilepsy care.

This project seeks to develop a community pharmacist integrated population health intervention for people living with epilepsy by (1) identifying best practices to address the needs of persons living with epilepsy and their caregivers; (2) develop an intervention using a stakeholder driven and consensus building approach; and (3) evaluate the acceptability, appropriateness, and feasibility of the intervention. The intervention developed from this project will be piloted and evaluated for effectiveness in future research.

INVESTIGATORS:

Jennifer Bacci, Assistant Professor, Department of Pharmacy
H. Steve White, Professor and Chair, Department of Pharmacy
Sabra Zarāa, CHOICE PhD student, Pharmacy
John Miller, Neurology and Neurological Surgery
Edward Novotny, Pediatrics and Neurology
Bryan Weiner, Global Health and Health Services
ALUMNI UPDATES

Blythe Adamson, ’18, MPH, PhD
Business Insider named CHOICE alumna Blythe Adamson as one of 30 leaders under 40 transforming US healthcare. The list includes scientists, doctors, and entrepreneurs selected from hundreds of nominations, based on their potential to improve healthcare nationwide.

After graduating from CHOICE in 2018, Adamson moved her family from Seattle to New York to join the health tech start-up company Flatiron Health. “I dragged my kids across the country so I could get access to this data,” Adamson, now a senior quantitative scientist at Flatiron, said.

Dr. Adamson was recognized in Business Insider, the Washington Post, and more than 50 other press stories for her recent work as lead author on a study examining how the Affordable Care Act (ACA) affected racial equity in cancer care. The study, which sparked from a Flatiron hackathon project, found that ACA Medicaid expansion was associated with reduction in racial disparity in timely treatment of advanced cancer. The results were selected for Plenary presentation on the main stage at the American Society of Clinical Oncology (ASCO) 2019 Annual Meeting in Chicago. Congratulations, Blythe!


Carrie Bennette, ’15, MPH, PhD
Carrie was recently promoted at Flatiron Health in New York, NY, to Principal Quantitative Scientist and is now leading the quantitative scientists on the machine learning team.

Mark Bounthavong, ’18, MPH, PharmD, PhD
Data Pharmacist Program Manager, PBM VA Academic Detailing Services, San Diego, CA
Health Economist, VA Health Economics Resource Center (HERC), Menlo Park, CA
Research Affiliate, Center for Primary Care and Outcomes Research, Stanford University, Palo Alto, CA.

He and Dr. Emily Williams from Health Services also recently presented their preliminary results at the AcademyHealth 2019 Annual Research Meeting (ARM) of a study exploring how academic detailing may help reduce mortality in veterans prescribed opioids.

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DR EMILY WILLIAMS, HEALTH SERVICES, AND MARK BOUNTHAVONG PRESENTING AT ARM 2019 IN WASHINGTON DC.
William Canestaro, ’17, MS, PhD
William Canestaro, Managing Director at Washington Research Foundation, was selected as a 2019 “40 under 40” by the Puget Sound Business Journal. Will continues to collaborate with and support our students, faculty, and the institute through his work with the Washington Research Foundation. Congratulations, Will!

Nathorn (Nui) Chaiyakunapruk, ’01, PharmD, PhD
Job change: began a new position as a Professor at the University of Utah, College of Pharmacy, Department of Pharmacotherapy. Prior to this role, Nui has worked as an Associate Professor at Naresuan University in Thailand and a Professor at Monash University Malaysia.

Jean Malacan, ’16, PharmD, MS
Job change: started as Global HEOR Project Leader Oncology at Bayer on April 2019, based in Basel, Switzerland

Presented at an issue panel at ISPOR annual meeting “Are standard HTA approaches to cost-effectiveness modelling appropriate for tumour-agnostic oncology products with basket trials?”. The panel was comprised of Jean, CHOICE affiliate faculty John Watkins (Premera), Richard Chapman (ICER), and moderated by Stacey Kowal (IQVIA).

Devender S. Dhanda, ’18, MS, PhD
Current position: Worldwide HEOR Associate Director, Bristol-Myers Squibb.

Meng Li, ’18, PhD, MS
Current position: Postdoctoral Fellow, University of Southern California Schaeffer, Center for Health Policy & Economics, Los Angeles, CA

Sara Higa, ’18, PharmD, MS
Current Position: Senior Manager, Global Health Economics and Outcomes Research, Allergan, Irvine, CA

Chiemeka Ike, ’18, MPH, PharmD, MS
Current Position: Manager, Health Economics and Outcomes Research, Seattle Genetics
Jean McDougall, MPH, PhD

Former Postdoctoral Fellow, 2013-2016, funded by Fred Hutchinson Cancer Research Center

As an Assistant Professor in the Department of Internal Medicine at the University of New Mexico, Jean’s research focuses on understanding the causes of financial hardship among cancer survivors and designing interventions to address the financial consequences of cancer. Jean recently published a manuscript in the Journal of Cancer Survivorship about socioeconomic disparities in quality of life among cancer survivors. In addition, her work on food insecurity was featured in a talk at the 2019 ISPOR conference in New Orleans and won a prize for best podium presentation.


Veena Shankaran, ’12, MS, MD

Veena received Seattle Business Magazine Leaders in Health Care Gold Award: Achievement in Medical Research. In addition, she was recently appointed the new co-director of the Fred Hutchinson Institute for Cancer Outcomes Research (HICOR), alongside CHOICE Adjunct Professor, Scott Ramsey, MD, PhD (director). In her new role, Veena will collaborate with Ramsey in strategic planning, scientific priority setting, fundraising and organizational development.

Jonathan Watanabe, ’08, ’12, PharmD, PhD

Jonathan Watanabe was named this year’s UW Pharmacy Alumni Association Distinguished Alumni Award Pharmaceutical Science and Research recipient. Jonathan was the original recipient of the prestigious UW/Allergan Post-doctoral Fellowship in Health Economics and Outcomes Research. Jonathan received both an MS and PhD from CHOICE, formerly PORPP. His major research areas include: value of pharmacist services, affordability and access to medications, older adult medicine research and policy, high-risk medications and opioid use disorder. He was recently named the first pharmacist to the National Academy of Medicine (former Institute of Medicine) Emerging Leaders in Health and Medicine Scholars Program, Jonathan continues his national-level leadership in pharmaceutical research.

THE CLASS OF 2019 WITH CHOICE GRADUATE PROGRAM MANAGER, MARINA GANO.
Alumni collaboration:

In May 2019, CHOICE Director Anirban Basu and alumni Carrie Bennette, ’15, and Blythe Adamson, ’18, led a workshop together called “Generating External Control Arms Using Real-World Data: Analytic Challenges and Recommendations” at ISPOR International Meeting in New Orleans.

Carrie and Blythe also co-instructed the ISPOR Short Course “Tools for Reproducible Real-World Data Analysis” at the ISPOR International Annual Meeting, New Orleans, 19 May 2019, and ISPOR Europe, Barcelona, 10 Nov 2018. They will teach this again at the ISPOR Europe meeting this fall in Copenhagen. Some of the content from their course was highlighted in the Value and Outcomes Spotlight magazine.


In 2016, Jonathan was selected as the National Academy of Medicine (NAM) Anniversary Pharmacy Fellow. NAM fellows are chosen based on their professional qualifications, reputations as scholars, professional accomplishments, and relevance of current field expertise to the work of the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine (NASEM).

Nationally recognized for his leadership and research, Jonathan's research on cost of non-optimized medication regimens and policy recommendations on comprehensive medication management has been cited in successful legislation granting provider status for pharmacists. He collaborates with senior leadership of the Get The Medications Right Institute to improve patient care via clinical pharmacists nationally. In 2018, he was recognized as an NAM Emerging Leader in Health and Medicine. He serves the NASEM Forum on Drug Discovery and Translation: Examining the Impact of Real-World Evidence and was a contributor to the Making Medicines Affordable: A National Imperative report.

Congratulations, Jonathan!
FACULTY GRANTS, AWARDS, AND ACTIVITIES

Aasthaa Bansal
Promoted to Associate Professor

Invited presentation at Lifetime Data Science Conference, American Statistical Association, Pittsburgh, PA: “Evaluating the time-varying prediction accuracy of survival models used in dynamic decision-making”

Invited presentation at Seattle Symposium in Health Care Data Analytics, Seattle, WA: “Biomarker Guided Dynamic Decision Making”

Anirban Basu

Served on, and completed, ISPOR Task Force on Value of Information Analysis for Research Decisions. This task force was formed to develop good practice guidance for using methods of value of information analysis to inform both technology reimbursement decisions and research prioritization decisions.

Noteworthy Presentations
• Willard G. Manning Memorial Lecture, University of Chicago

Josh Carlson
Grant: BEAT MS, 10/01/2018 – 02/31/2020, Role: PI, Funder: Benaroya Research Foundation, National Institute of Allergy and Infectious Diseases (NIAID)

This past year Dr Carlson has been leading the CHOICE Institutes ICER related work, continuing work on performance-based risk sharing arrangements, and expanding into cost-effectiveness alongside clinical trials with work on trial evaluating stem cell transplant versus best available therapy in multiple sclerosis.

Lou Garrison
Served on ISPOR Health Policy Council and the ASCO Value Task Force Methodology Working Group.

Noteworthy talks given:
• “Novel Approaches to Value Assessment Within the Cost-Effectiveness Framework: An Introduction ISPOR Value Summit” in Washington, D.C, Oct. 19, 2018
• How can we value novel medicines? A health economic perspective
  • “Delivering novel therapies in the 21st century”
  • The Royal Society and National Academy of Medicines London UK, October 2018
• Valuing Innovative Medicines: Cost-Effectiveness Analysis and Affordability
• Algerian Pharmaceutical Federation Third National Congress in Algiers, Algeria, in November 2018
• Received the PhRMA Foundation and Personalized Medicine Coalition 2018 Value Assessment Challenge First-Prize Award as lead author on a paper on “A Strategy to Support the Efficient Development and Use of Innovations in Personalized and Precision Medicine.”
• Received PhRMA Foundation Research Award for “Implementing Augmented Cost-Effectiveness Analysis: Challenges and Next Steps ($100,000). In collaboration with Office of Health Economics, London.
• PI of the Pfizer-Sponsored Post-Doctoral Fellowship, 2018-2020
• Served on ISPOR Health Policy Council and the ASCO Value Task Force Methodology Working Group.
**Ryan Hansen**

2019 Certificate of Merit in Precepting – University of Washington School of Pharmacy

2019 Outstanding Contribution in Reviewing – Journal of the American Pharmacists Association

2018 National Adult and Influenza Immunization Summit (NAIIS) “Immunization Neighborhood” Adult Immunization Champion Award – Project VACCINATE

**Scott Ramsey**

Named Co-Chair of the Cancer Care Delivery Research Steering Committee National Cancer Institute

**Sean Sullivan**

Awarded the 2019 Icon of Pharmacy award, Oregon State University

**Andy Stergachis**

**Awards:**
- Wall of Recognition, Stadium High School

**Grants:**
- Medicines, Technologies, and Pharmaceutical Services (MTaPS)
  - USAID. PI of UW Subcontract from MSH. 10/01/2018-09/30/2022
  - Project overview: The goal of MTaPS is to enable low- and middle-income countries to strengthen their pharmaceutical systems to ensure sustainable access to and appropriate use of safe, effective, quality-assured, and affordable essential medicines and medicine-related pharmaceutical services.
- Landscape Analysis: Sentinel Site Readiness for Maternal Immunization Active Safety Surveillance in LMIC.
  - Bill & Melinda Gates Foundation. PI of UW Subcontract from Tulane. 6/1/2019-5/31/2021
  - Project overview: We will define the landscape for integrated maternal immunization active safety surveillance by reviewing the literature, building consensus among experts, and identifying potential sentinel sites in low- and middle-income countries.

**Activities**
- Member, Committee to Review Long-Term Effects of Antimalarial Drugs, National Academy of Medicine.

**Dave Veenstra**

Dr. Veenstra is collaborating with investigators at Vanderbilt University and Geisinger to study the cost effectiveness of population-level genomic screening. Greg Guzauskas, PhD (CHOICE Senior Scientist) and Scott Spencer, MPH (PhD student in Public Health Genomics) are developing the economic models for this ambitious project.

**Davene Wright**

Awarded the Harvard Medical School Diversity Inclusion and Community Partnership Faculty Fellowship

In September 2019, Dr. Wright will be joining the Department of Population Medicine at Harvard Medical School

**Shelly Gray**

Received the grant award, Reducing CNS-active Medications to Prevent Falls and Injuries in Older Adults (Phelan, Gray co-PIs). CDC, 9/30/18-8/31/22 (15%), $2,900,000.


**Beth Devine**

**Grants**
- Principal Investigator, Customizing Value-based Methods to Prioritize Implementation of Pharmacogenomic Clinical Decision Support for Learning Health Systems, AHRQ 1R21HS026544-01 (2019-2021)
- Principal Investigator, Evaluating the Impact of Pharmacogenetic Testing on Clinical Outcomes in a Retirement Community: A Feasibility Study. UW School of Pharmacy Innovations Award (2018-2019)
Consortium Site Principal Investigator (Assistant Director), Pacific Northwest Evidence-based Practice Center (EPC) V with Oregon Health & Science University (OHSU), AHRQ (2015-present)


Noteworthy Presentations
“Pharmacogenetic testing: The economics of personalized medicine”. Day of Science Keynote Address, American Pharmacists Association Annual Meeting and Exposition, Seattle, WA

“Using a Bayesian network meta-analysis to parameterize a cost-utility and value of information analysis of biologics for Moderate-to-Severe Crohn’s disease”. Society for Research Synthesis Methodology, Chicago, IL (with Mark Bounthavong)


“Using online real world evidence tools to enhance formulary decision-making. Academy of Managed Care Pharmacy Nexus Meeting, Orlando, FL (with Jennifer Graff, Sophia Yun, Shuxian Chen and Jamie Ta). This presentation has been selected for inclusion in an AMCP online training program on Real World Evidence

Awards
Nominated for Faculty Mentor of the Year Award, UW School of Pharmacy (June)

Activities
Hosted a Fulbright Scholar to study evidence synthesis/ network meta-analysis - Teerapon Dhippayom, PharmD, MS, PhD. Assistant Professor, Department of Pharmacy Practice, Faculty of Pharmaceutical Sciences, Naresuan University, Phitsanulok, Thailand

Continuing member of the Academy Health Methods and Data Council

Scott Ramsey
named Co-Chair of the Cancer Care Delivery Research Steering Committee National Cancer Institute

CHOICE FACULTY IN THE NEWS
Shelly Gray’s dementia research was mentioned in USA Today, KOMO News, and the June 2019 New York Times article, Risk for Dementia May Increase With Long-Term Use of Certain Medicines: https://nyti.ms/2FBC5Cy

Scott Ramsey was interviewed in an LA Times Article, Soaring insurance deductibles and high drug prices hit sick Americans with a ‘double whammy’, published June 2019: https://lat.ms/2MuYRSF

Listen to Dr. Lou Garrison discuss the benefits and pitfalls of the QALY at ISPOR 2019.
Video Interview (7:00): http://bit.ly/LOU-QALY
**AASTHAA BANSAL**


**DOUG BARTHOLD**


**ANIRBAN BASU**


**JOSHUA CARLSON**


**BETH DEVINE**


**LOU GARRISON**


**SHELLY GRAY**


**RYAN HANSEN**


TOM HAZLET

ZACHARY MARCUM


SCOTT RAMSEY


SULLIVAN SD

DAVID VEENSTRA


ANDY STERGACHIS


SEAN SULLIVAN
Ramsey SD, Shankaran V, Sullivan SD. Basket Cases: How real-world testing for drugs approved based on basket trials might lead to false diagnoses, patient risks, and squandered resources. Journal of Clinical Oncology 2019.


STUDENT PUBLICATIONS

ELIZABETH BROUWER


SIMI GREWAL


NATHANIEL HENDRIX


BOSHEN JIAO


ENRIQUE SALDARRIAGA


KANGHO SUH

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