UNIVERSITY *of* WASHINGTON

THE CHOICE INSTITUTE

School of Pharmacy

ANNUAL REPORT 2020

THE COMPARATIVE HEALTH OUTCOMES, POLICY & ECONOMICS INSTITUTE

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BACK COVER DONOR APPRECIATION

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.

CHOICE STATEMENT ON DIVERSITY, EQUITY, AND INCLUSION

CHOICE is committed to creating an inclusive academic community where every individual is treated fairly and with dignity and respect. We strongly believe that diversity enriches learning, broadens the perspectives of all in our program, and improves our sense of community. Diversity requires an atmosphere of inclusion, tolerance, respect, and equity.

Our equality and diversity principles:

- We value the tremendous diversity of the human experience and believe that this diversity strengthens our communities and our program.
- We believe that discrimination or exclusion based on individual characteristics and circumstances, such as age; disability; caring or dependency responsibilities; gender or gender identity; marriage and civil partnership status; political opinion; pregnancy and maternity; race, color, caste, nationality, ethnic or national origin; religion or belief; sexual orientation; socio-economic status; or other distinctions, is unjust and represents a waste of talent and a denial of opportunity for self-fulfillment.
- We recognize that patterns of under-representation and differences in outcomes at CHOICE can be challenged through positive action.
- We respect the rights of individuals, including the right to hold their own opinions and beliefs, but will not allow these opinions to be manifested in a way that is hostile or degrading to others.
- We expect commitment and involvement from all our faculty, staff, and students in working towards the achievement of our vision.

CHOICE FACULTY

David Au, MS, MD
Adjunct Professor

Joseph Babigumira, MBChB, MS, PhD
Adjunct Associate Professor

Jennifer Bacci, MPH, PharmD, MPH, BCACP
Assistant Professor

Aasthaa Bansal, PhD
Associate Professor & Chair, Preliminary Exams

Douglas Barthold, PhD
Research Assistant Professor

Anirban Basu, PhD
Stergachis Family Endowed Director & Professor

Brian Bresnahan, PhD
Adjunct Research Associate Professor

Josh Carlson, MPH, PhD
Associate Professor, Associate Director, Graduate Program

Beth Devine, PharmD, MBA, PhD
Professor, Director, Graduate Program

David Flum, MD, MPH
Adjunct Professor & Director, Surgical Outcomes Research Center

Louis Garrison, Jr., PhD
Professor Emeritus

Shelly Gray, PharmD, MS
Shirley & Herb Bridge Endowed Professor & Director, Plein Center for Geriatric Pharmacy Research, Education and Outreach

Ryan Hansen, PharmD, PhD
Associate Professor & Director, Industry Fellowships

Thomas Hazlet, PharmD, DrPH
Associate Professor, Retired

Lurdes Inoue, MS, MS, PhD
Adjunct Professor

Jerry Jarvik, MD, MPH
Adjunct Professor

Larry Kessler, ScD
Adjunct Professor

Gary Lyman, MD, MPH
Adjunct Professor

Zachary Marcum, PharmD, MS, PhD
Assistant Professor & Assistant Director for Research, Plein Center for Geriatric Pharmacy Research, Education and Outreach

Scott Ramsey, MD, PhD
Adjunct Professor, Director, Hutchinson Institute for Cancer Outcomes Research & Evaluation

Andy Stergachis, PhD, BPharm
Professor, Associate Dean for Research, Graduate Education & New Initiatives & Interim Director, Biomedical Regulatory Affairs Program

Sean D. Sullivan, BScPharm, MSc, PhD
Professor & Dean, School of Pharmacy

David Veenstra, PharmD, PhD
Professor, Associate Director of CHOICE Institute

STAFF

Lisa Bloudek, PharmD, MS
Senior Research Scientist

Marina Gano, M.Ed.
Graduate Program & Operations Manager

Greg Guzauskas, MSPH, PhD
Senior Research Scientist

Connor Henry, MPH
Research Project Manager

Paul Kraegel, MSW
Program Operations Specialist

"The hallmark of our program is its proven impact on local and national policy."

SEAN D. SULLIVAN, PROFESSOR & DEAN
UW SCHOOL OF PHARMACY

FROM THE DIRECTOR

Dear Friends and Colleagues,

I don't know how many times I have expressed the fact that we are going through an unprecedented time in our lifetimes. The worldwide pandemic, the social unrest, and the systemic racism against our black colleagues and friends in the US have brought us stark realities that we must face together to overcome.

The CHOICE Institute researchers are engaged in critical research and discussions to understand Covid-19 infections and the valuation of treatments and vaccines. It is also actively working towards upholding its diversity missions and consciously trying to avoid the pitfalls of racism and microaggressions highlighted by the #blackinivory series in social media. We are also learning in this process. We reemphasize our Diversity statement in this report, which forms an essential part of all our decision making at the Institute.

Our third annual report highlights the accomplishments of our students, faculty, and alumni over the past 12 months. But first, I am happy to introduce **Connor Henry** as the new CHOICE Research Project Manager. Connor will provide 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.

We congratulate our recent graduate Ph.D. students, E**lizabeth Brouwer, Nathaniel Hendrix, Wei-Jhih Wang,** and MS students, **Ashley Cha, Brennan Beal, David Fox, Jae Hyun Lee, Karen Guo, Samuel Hong, Phoebe Wright.** We also e-welcome a new crop of Ph.D. and MS students during the Fall of 2020. We will continue to work with them to smooth their transitions during these uncertain times.

We also welcomed two new post-doctoral Senior Research fellows, **Drs. Kate Johnson** and **Noah Hammurland**, to CHOICE. They will be working on developing the National Economic Impact analysis under NHLBI's Cure Sickle Cell Initiative, a new $4.5M Collaborative led by the CHOICE Institute at the UW School of Pharmacy (UWSOP), Fred Hutch, NHLBI, and The Emmes Corporation.

The grant productivity of the CHOICE Institute continues to be healthy and diversified. CHOICE investigators received over $5.8M in grants and contract funding over the past year from a wide variety of sources, including NIH, AHRQ, foundations, and industry.

Woojung Lee, PharmD, a 3rd-year CHOICE Ph.D. student, was selected to receive two fellowship awards in support of her research on aging populations. S**amuel Hong, PharmD, MS** UW/Genentech Postdoctoral Fellow 2019-2021, and **Boshen Jiao, MPH** 3rd year CHOICE Ph.D. student, won the Louis Sr. and Marilyn Garrison Endowed Prize in Health Policy and Economics. **Brennan Beal, PharmD, MS,** UW/AbbVie Postdoctoral Fellow 2019-2021, was the recipient of the 2020 UW School of Pharmacy Graduate Student Leadership Award.

Our alumni continue to shine. CHOICE alumna **Blythe Adamson** at Flatiron led a study with FDA that was published in JAMA. The investigators used a set of interrupted time series regression models to look at the impact of an FDA alert and label change for immunotherapy that had received accelerated approval for bladder cancer. Dr. Adamson also volunteered on the White House Coronavirus Task Force this year. Alumnus **Will Canestaro** at Washington Research Foundation was recognized as Health Innovation Northwest top 10 finalist for 2019 Health Innovators of the Year, and **Jon Watanabe** is a 2019-2020 National Academy of Medicine Emerging Leader in Health and Medicine Scholar.

The CHOICE Institute unveiled the REAdi (Real-World Evidence Assessments and Needs Guidance Tool: A Framework for Evaluating Real-World Evidence) tool this year. Led by **Dr. Beth Devine** and 5th year Ph.D. student **Shuxian Chen**, the Readi tool is a web-based tool to help healthcare stakeholders and decision-makers assess existing real-world evidence (RWE) in health technology assessment (HTA) processes. A paper comparing READi with other available tools is forthcoming in JMCP.

We missed seeing our alumni and friends at ISPOR this year, but we are cautiously optimistic that we will be able to connect in person in the coming year. We remain ever grateful for your continued support that is instrumental to our success in the future.

We wish all good health and safety.

Sincerely,
Anirban Basu

CLASS OF 2020

DOCTOR OF PHILOSOPHY

Elizabeth Brouwer

BA, MPH, University of Michigan

DISSERTATION: *Exploring the uptake of value-based formulary strategies and their application to specialty drugs*

ADVISOR: *Ryan Hansen, PharmD, PhD*

Lizzy has started a position as a Research Associate in HEOR at Curta Consulting in Seattle.

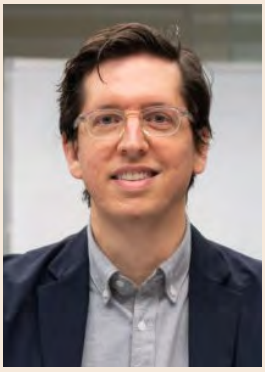
Wei-Jhih Wang

BS, Chang-Gung University; MS, Taiwan National University; MS, University of Washington

DISSERTATION: *Mimicking Clinical Trials Using Real-World Data - A Novel Method and Applications*

ADVISOR: *Anirban Basu, PhD*

Wei-Jhih will be joining Pharmerit International, Lp. as a Senior Research Analyst.



Nathaniel Hendrix

BA, Southwest Texas State University; PharmD, University of Washington

DISSERTATION: *Using Health Economics Tools to Enhance the Clinical Utility of Artificial Intelligence-Based Diagnostics: A Case Study in Breast Cancer Screening*

CHAIR: *David Veenstra, PharmD, PhD*

Nathaniel has started a position as a Postdoctoral Researcher at the Harvard T.H. Chan School of Public Health.

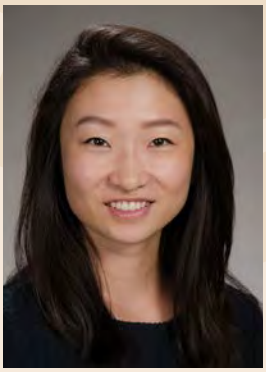
MASTER OF SCIENCE

Brennan Beal

BS, North Carolina State University; PharmD, University of North Carolina at Chapel Hill

THESIS: *Comparing healthcare resource use and costs for patients with Normal Tension Glaucoma across levels of severity: a nationally representative sample of commercially insured US adults age 40 and older*

ADVISOR: *Beth Devine, PharmD, MBA, PhD*



Ashley Cha

BA, PharmD, University of Illinois at Chicago

THESIS: *Annual Out-of-Pocket Costs and Productivity Loss Among Patients with Diabetic Kidney Disease Compared to Type 2 Diabetes Mellitus*

ADVISOR: *Ryan Hansen, PharmD, PhD*

David Fox

BS, San Francisco State University; PharmD, University of Washington

THESIS: *Nusinersen Treatment and Healthcare Costs in Spinal Muscular Atrophy*

ADVISOR: *David Veenstra, PharmD, PhD*

He Karen Guo

BS, Peking University; MS, The London School of Economics

THESIS: *Should we be studying family communication tools to improve cascade testing in genomics? A value-of-information analysis in Lynch syndrome*

ADVISOR: *David Veenstra, PharmD, PhD*

Jae Hyun Lee

BS, University of California San Diego; PharmD, University of Illinois at Chicago

THESIS: *Geographic Variation in the Use of Triptans and Opioids for the Acute Treatment of Migraine Attacks*

ADVISOR: *David Veenstra, PharmD, PhD*

Samuel Hong

BS, University of California, San Diego; PharmD, University of Illinois at Chicago

THESIS: *The impact of cost sharing on adherence to ibrutinib for patients with diffuse large B-cell lymphoma*

ADVISOR: *David Veenstra, PharmD, PhD*

Phoebe Wright

BS, University of Tennessee, Knoxville; PharmD, University of Washington

THESIS: *Indirect Costs Associated with Human Epidermal Growth Factor Receptor Positive (HER2+) Metastatic Breast Cancer*

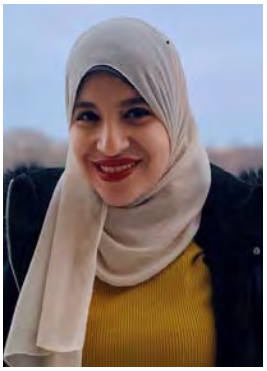
ADVISOR: *Josh Carlson, PhD*

WELCOME: NEW STUDENTS AND FELLOWS

PHD STUDENTS

Zizi Elsisi

BPharm, Cairo University; MS, University of Cincinnati



Zizi is a Fulbright alumna who received her master's degree in Pharmaceutical Sciences at the University of Cincinnati. She is excited to join CHOICE, where she will be able to strengthen her knowledge and collaborate on research projects with faculty members and peers. Zizi's research interests include economic evaluations, health technology assessments, and health policy. Zizi aspires to open her own consultancy company in Egypt, where she can promote the science of HEOR.

Ashley Tabah

BS, McGill University; MS, Barcelona Graduate School of Economics; MPH, Columbia University

Ashley joins us from New York City, where she has been an HEOR researcher at Celgene for the last 4 years, generating evidence to support the value of hematology and oncology therapies. She is excited to join CHOICE and collaborate with the faculty and students. She is especially looking forward to further developing her research, modelling, and quantitative skills. As a Canadian and therefore a hockey fan, Ashley can't wait to attend Seattle Kraken games.

Rachel Wittenauer

BA, Johns Hopkins University; MPH, University of Washington

Rachel joins us from the School of Public Health at University of Washington, where she received her MPH in Global Health. Prior to UW, she worked as a consultant with Deloitte in Washington DC on several federal public health programs at NIH, CDC, and USAID. Her primary research interests include vaccine programs, global health security, health economics, and health equity. Down the road, she plans to work with governments, non-profits, and communities to strengthen health systems and reduce the burden of preventable diseases. She's excited to join the CHOICE Institute and hopes to collaborate with everyone in-person soon.

NEW PHARMD/MS FELLOWS

Kimberly Cai, AbbVie

BS, PharmD, University of Maryland Baltimore

Kim is a recent graduate of the University of Maryland, Baltimore where she conducted research involving patient-reported outcomes and economic burden of illness while under the mentorship of faculty at the associated Pharmaceutical Health Services Research department. Her current research interests include health technology assessments and global market evidence needs. She is excited to continue both her education and professional development under the tutelage of the UW Faculty and AbbVie team.

Gilbert Ko, Bayer

BA, MBA, PharmD, University of Washington

Gilbert completed his undergraduate degree in biochemistry, his MBA, and his PharmD at the University of Washington. He decided to pursue a career in health economics and outcomes research (HEOR) after interning with AMCP and Genentech's Evidence for Access organization in South San Francisco. Gilbert's research interests include value assessments of emerging therapies and cost-effectiveness modeling. He is excited to build upon the foundational knowledge of HEOR he gained from courses and internships, while working with the Bayer team and the CHOICE faculty.

Eunice Kim, Genentech

BS, PharmD, University of Washington

Exposure to the CHOICE Institute during pharmacy school helped shape Eunice's research interests in healthcare policy, value-based care, and real-world evidence. Her experiences interacting with HEOR within the academic, industry, managed care, and consulting spaces have allowed her to appreciate the vastness of the HEOR field and its capability to impact population health and access. Eunice is excited to officially join the CHOICE family and continue her technical training in economic evaluation as well as conduct her own database analysis.

Jenny Park, Genentech

BS, University of Chicago; PharmD, University of Illinois Chicago

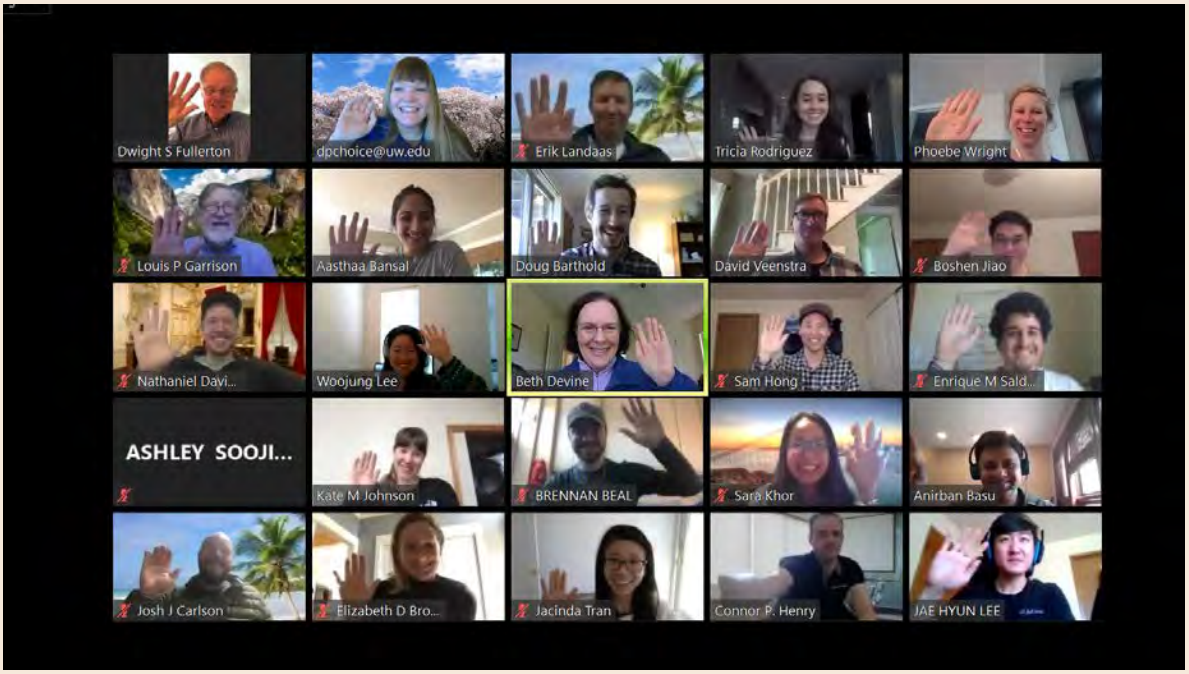
Jenny developed a strong interest in health economics outcomes research (HEOR) as she recognized the critical importance of demonstrating the value of treatment options to various stakeholders. Her research interests include claims analyses, modeling, comparative effectiveness, and cost-effectiveness research. She is excited to learn and build her HEOR skillsets at the CHOICE Institute where she believes that UW faculty and leaders from the pharmaceutical industry synergistically provide unparalleled growth opportunities.

Tae Jin Park, AbbVie
BA, UC Berkeley; PharmD, UC San Francisco

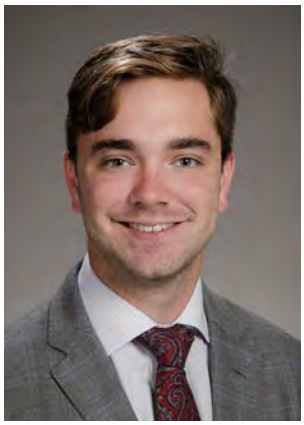
Tae Jin's research interests are in healthcare resource allocation and differing payment models. He first became interested in HEOR while interning at Chinese Community Health Plan, where he performed cost-effectiveness and claims data analyses to inform formulary decisions across various lines of business. He saw the increasing need to assess the value of a drug based on real-world evidence in today's healthcare landscape. He is looking forward to broadening his skill set and interests while working with the CHOICE faculty and AbbVie team.

Jacob Silvers, Seattle Genetics
PharmD, University of Arizona

Jacob recently graduated from the University of Arizona College of Pharmacy. His interest in health economic assessments started when he attended a seminar on economic modeling. This passion continued on through his rotations in HEOR, managed care, and early stage oncology trials. His interests include modeling and patient-reported outcomes. He is excited to begin training with the CHOICE Institute and Seattle Genetics.



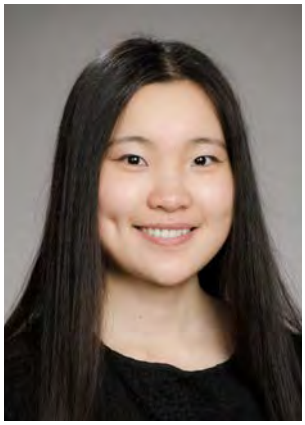
CURRENT STUDENTS AND **FELLOWS**



Brennan Beal PharmD, MS

AbbVie Postdoctoral Scholar Fellow (Year 2)

ADVISOR: Beth Devine

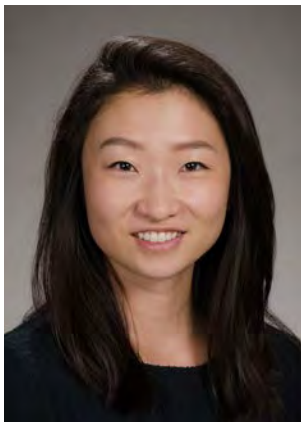


Shuxian Chen, MA

PhD Candidate (Year 5)

DISSERTATION TITLE: Evaluating Recent Policies to Accelerate Generic Drug Entry

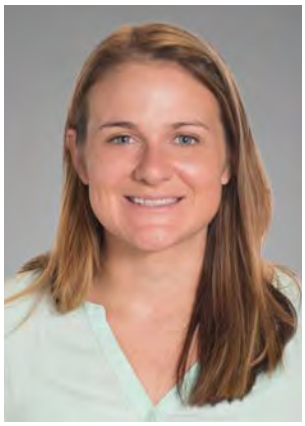
ADVISOR: Anirban Basu



Ashley Cha, PharmD, MS

Bayer Postdoctoral Scholar Fellow (Year 2)

ADVISOR: Ryan Hansen



Samantha Clark, MS

PhD Student (Year 4)

DISSERTATION TITLE: Investigating the effect of Gleevec price on adherence, outcomes, and costs in patients with chronic myeloid leukemia

ADVISOR: Aasthaa Bansal

Yilin Chen, MPH

PhD Student (Year 2)

ADVISOR: Beth Devine

David Fox PharmD, MS

Genentech Postdoctoral Scholar Fellow (Year 2)

ADVISOR: David Veenstra

Samuel Hong, PharmD, MS

Genentech Postdoctoral Scholar Fellow (Year 2)

ADVISOR: David Veenstra

Sara Khor, MASc

PhD Student (Year 2)

ADVISOR: Josh Carlson

Shangqing Joyce Jiang, MPH

PhD Student (Year 2)

ADVISOR: Beth Devine

Erik Landaas, MPH

PhD Candidate (Year 5)

DISSERTATION TITLE: An Evaluation of the Development and Effectiveness of a Hospital-based Health Technology Assessment (HB-HTA) Program at the University of Washington Medical Center

ADVISOR: Sean Sullivan

Boshen Jiao, MPH

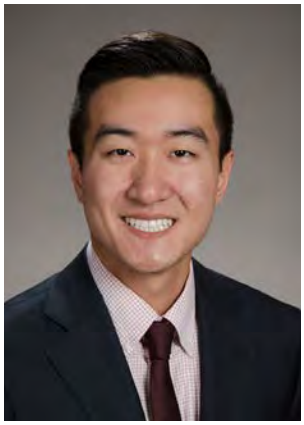
PhD Student (Year 3)

ADVISOR: Anirban Basu

Woojung Lee, PharmD

PhD Student (Year 3)

ADVISOR: Ryan Hansen



Jae Hyun Lee, PharmD, MS

AbbVie Postdoctoral Scholar Fellow (Year 2)

ADVISOR: Beth Devine

Naomi Schwartz, MPH

PhD Student (Year 3)

DISSERTATION TITLE: Dietary Therapy for Pediatric IBD: An Epidemiologic and Economic Analysis

ADVISOR: Beth Devine

Tricia Rodriguez, MPH

PhD Candidate (Year 4)

DISSERTATION TITLE: Evaluating the Clinical Utility of a New Risk Prediction Model in Cystic Fibrosis

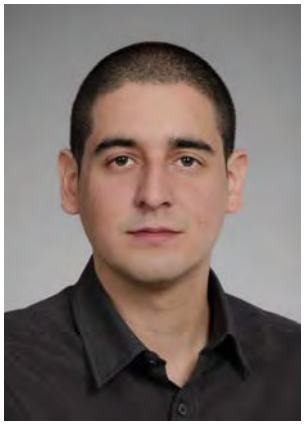
ADVISOR: Aasthaa Bansal

Lauren Strand, MS

PhD Candidate (Year 5)

DISSERTATION TOPIC: Cannabis substitution for prescription drugs: understanding longitudinal trends in the era of legal cannabis

ADVISOR: Ryan Hansen



Enrique Saldarriaga, MS

PhD Student (Year 4)

DISSERTATION TITLE: Finding the optimal sample size to estimate HIV incidence at the second administrative level in the United States. A case of study on Atlanta Georgia

ADVISOR: Anirban Basu

Jacinda Tran, PharmD, MBA

PhD Student (Year 2)

ADVISOR: David Veenstra

Phoebe Wright, PharmD, MS

Seattle Genetics Postdoctoral Scholar Fellow (Year 2)

ADVISOR: Josh Carlson

Sabra Zaraa, PharmD, MPH

PhD Student (Year 3)

ADVISOR: Andy Stergachis

PHOTO CAPTION: IN FEBRUARY, WE HAD THE OPPORTUNITY TO HOST DR. CHUCK PHELPS ONCE AGAIN IN CHOICE.

POSTDOCTORAL SCHOLAR UPDATES

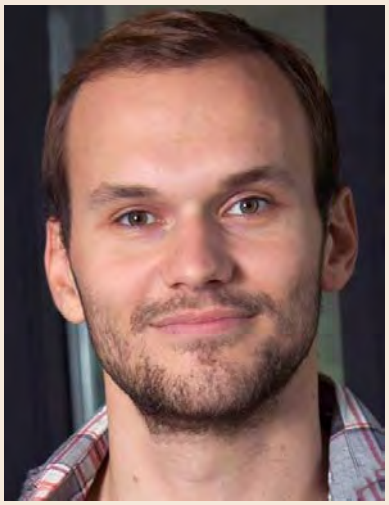
WELCOMING OUR NEWEST POSTDOCTORAL SCHOLARS, DR. KATE JOHNSON AND DR. NOAH HAMMARLUND.

Kate joined CHOICE in January 2020 as an NHLBI postdoctoral fellow. She recently completed her PhD in Pharmaceutical Sciences at the University of British Columbia. Her research incorporates methods from health economics, epidemiology, and health outcomes research to evaluate policies and interventions for improving patient health. At CHOICE, Kate is working with a team at the UW and Fred Hutchinson Cancer Research Center to evaluate the economic impact of curative therapies for sickle cell disease. Kate is also working to expand a simulation model of Type 2 Diabetes previously developed at CHOICE to evaluate the cardiovascular effects of novel glucose-lowering therapies. Kate has enjoyed meeting and working with many of the CHOICE faculty and students, and looks forward to continuing to learn from them.

In the second year of her fellowship, Kate will focus on developing a microsimulation model of sickle cell disease. She will also develop her skills in causal inference with the intention of applying these methods to large databases of electronic medical records. Kate is excited for a productive year ahead at CHOICE.

Noah joined the CHOICE Institute as a postdoctoral scholar in Fall 2020. His research merges the innovations of machine learning and applied health economics to understand and improve healthcare delivery and equity. He uses the innovations in machine learning to investigate clinical decisions, specifically the role of social factors in clinical disparities using clinical data. At CHOICE, his research focus will be the application of machine learning techniques to assess the predictability of the expenses for various subgroups of patients in cancer and sickle cell disease contexts.

Noah obtained his PhD at the O'Neil School of Public and Environmental Affairs at Indiana University in 2018, where he focused his study on health economics, health policy, statistics, and machine learning. He also taught several courses including health economics and statistics. Noah completed a National Library of Medicine Postdoctoral Fellowship in the Department of Biomedical Informatics and Medical Education at UW. A native of the PNW, Noah is happy to join CHOICE where he can enjoy scientific research as well as the best of the city and surrounding beauty.



WISHING GOOD LUCK TO OUR DEPARTING POSTDOCS, AIG AND KRITEE!

Dr. Kritee Gujral has worked as an NHLBI postdoctoral scholar with Dr. Anirban Basu since May 2018. Her research has focused on rural hospital closures & mergers and health disparities. Some recent work to highlight includes a recent publication with Anirban Basu in PNAS, highlighting how the current evidence generation process from clinical trials can lead to health disparities: https://www.pnas.org/content/117/25/14042 . She has recently authored a piece in VoxEU piece on rural hospital closures: https://voxeu.org/article/rural-hospital-closures-increase-mortality

In July, Kritee accepted a position as a Health Economist at U.S. Dept. of Veterans Affairs, Palo Alto, CA. We wish her all the best.

Dr Aig Unuigbe is our 2018-20 Pfizer Postdoctoral Scholar Fellow. He has spent the past year completing year 2 of his postdoctoral fellowship on-site at Pfizer in New York City under the mentorship of Drs. Anirban Basu and Lou Garrison along with his Pfizer mentor Dr. Cristina Masseria. He has had the opportunity to present at many conferences this year, notably, the 2020 American Society of Health Economists Virtual Conference, the Southern Economic Association Conference in November 2019 and a Pfizer Internal Workshop on Propensity Score Methods. Aig I earned his Ph.D. in Economics from the City University of New York Graduate Center in 2016. His research interests lie in Health Economics, Labor Economics and Applied Microeconometrics and has examined the impact of medicaid policy changes on immigrant parents and the lifecycle of generic prescriptions. Aig's appointment in the CHOICE Institute ended in August, and he is currently on the job market.

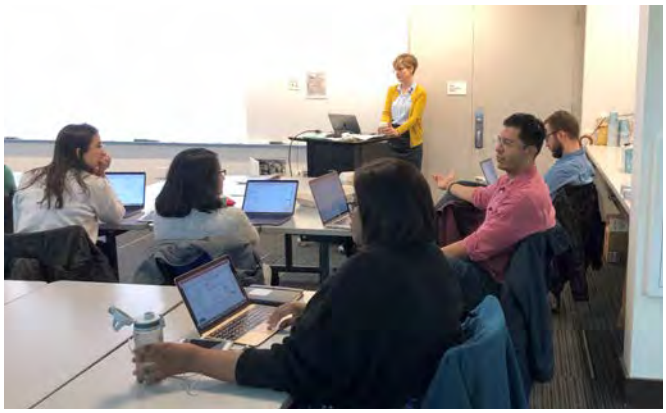
Aig reflected on his fellowship experience this summer, "I have enjoyed working on a variety of projects during the second year of my Fellowship at the Pfizer office. It has been a tremendous opportunity and a complement to my academic experience. I look forward to further exploring opportunities in the industry."

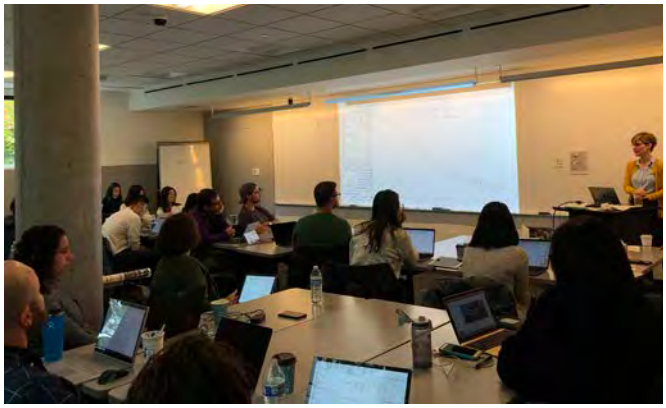
OCTOBER **DARTH WORKSHOP**

In October, the CHOICE Institute hosted a three-day in-person workshop Cost-Effectiveness Analysis and Decision Modelling Using R, taught by the Decision Analysis in R for Technologies in Health (DARTH) Working Group.

This interactive workshop was held on-campus and led by four of the DARTH working group instructors:

- **Fernando Alarid-Escudero, PhD**, Assistant Professor of the Drug Policy Program at the Center for Research and Teaching in Economics (CIDE) in Aguascalientes, Mexico.
- **Eva Enns, PhD**, Assistant Professor at the University of Minnesota's School of Public Health, in the division of Health Policy and Management.
- **Hawre Jalal, PhD**, Assistant Professor at the Department of Health Policy and Management and a researcher at the Public Health Dynamic Laboratory at the University of Pittsburgh.
- **Petros Pechlivanoglou, PhD**, Scientist at the Hospital for Sick Children's Research Institute and an Assistant Professor at the University of Toronto's Institute of Health Policy, Management and Evaluation.





The workshop had over 35 participants, including CHOICE students, alumni, faculty, and other campus community members. The entire workshop was recorded to be a permanent teaching and training resource for CHOICE students.

Why consider decision modeling using R? Economic evaluations often rely on decision models. As decision modeling advances, more complex models are being designed to better represent the underlying clinical conditions. In addition, decision models increasingly rely on new statistical and mathematical techniques (e.g. model calibration and value of information). In this course, participants learned to construct commonly used decision models, such as state-transition models (STM) like Markov cohort and microsimulation models, using R. The course covered different calibration methods to estimate parameters for STM from aggregated epidemiologic data and survival analysis to estimate STM transition probabilities from individual-level data. Lastly, it covered how to conduct probabilistic sensitivity analysis (PSA) on different types of models and cover the theory and application of value of information analysis (VOI) using a PSA dataset.

Thank you to the instructors, for sharing their good humor, patience, and diverse expertise in the field of decision sciences. Many of us met up with them again in Portland the following weekend, at the SMDM North American Meeting. Thank you to Aasthaa Bansal and Josh Carlson for workshop planning and execution, Marina Gano for on-site technical, video recording and logistical support, and to Meghan Turner and Anthony Morgan for bringing extra chairs from the Health Sciences!

HEALTH ECONOMICS CERTIFICATE PROGRAM UPDATE

The Certificate in Health Economics and Outcomes Research program is entering its 9th year. 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 475 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 the current state-of-the-art in the economic evaluation of health care technologies, and are introduced to the principles and methods of HTA practice. Students work in groups throughout the program on a capstone project, which applies their learning to an assigned country. Student evaluations have 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 is the Assistant Director and site principal investigator 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, and Aggregate Analytics, Inc. The UW joined the EPC program in 2013 and to date has participated in seventeen projects and more than twenty-five associated publications. The projects range in scope from noninvasive treatment of low back pain to effectiveness of telehealth. One recent project features a systematic review of treatments for acute 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 Josh Carlson, Beth Devine, Ryan Hansen, Scott Ramsey, Sean Sullivan, and numerous colleagues from the UW Schools of Medicine and Public Health.

CHOICE AND ICER COLLABORATION 2020 UPDATE

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), staff scientists (Greg Guzauskas and Lisa Bloudek), and our RA, Yilin Chen. We have also enjoyed the support of School of Pharmacy PharmD students Gilbert Ko and Michael Sporck during their HEOR rotations. To date we have completed or are working on economic evaluations on 16 topics: Anemia in chronic kidney disease (2020-2021), Supervised Injection sites (2020), Ulcerative Colitis (2020), nonalcoholic steatohepatitis (2020), Type II diabetes (2019), 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 (8 abstracts), and in peer reviewed journals (7 published, 2 in development).

In recent evaluations, we presented on the use of oral semaglutide to treat Type II diabetes and siponimod for secondary progressive multiple sclerosis. 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 oral semaglutide analysis, Greg Guzauskas presented work done with Ryan Hansen at the New England CEPAC in Providence, RI. Their work estimated the lifetime cost-effectiveness of oral semaglutide for type 2 diabetes mellitus versus Sitagliptin (Januvia®, Merck), Empagliflozin (Jardiance®, Boehringer Ingelheim and Eli Lilly), Liraglutide (Victoza®, Novo Nordisk), or ongoing background antihyperglycemic treatment (e.g., metformin with or without sulfonylureas) alone They found that, "based on current evidence, it is difficult to draw conclusions on oral semaglutide's long-term cost effectiveness," due to uncertainty about its long-term effectiveness. However, they concluded that it is likely to meet usual cost-effectiveness thresholds compared with background therapy alone but is unlikely when compared with empagliflozin using the estimated net price.

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.

The UW team will also be part of the ICER interactive modeler initiative that allow decision-makers within payers, pharmaceutical companies, and other stakeholders to access the models via a web enabled platform.

In summary, our collaboration with ICER continues to yield positive returns in terms of research productivity, student opportunities, and contributions to timely and impactful conversations about the value of emerging products in the U.S. We look forward to continued collaboration with ICER and the many companies developing innovative medical products.

HOW DO STAKEHOLDERS VALUE PRECISION MEDICINE, AND DO THEY HAVE DIFFERENT EVIDENCE THRESHOLDS FOR CLINICAL VS. GENOMIC PRECISION MEDICINE?

David Veenstra, Josh Carlson, and Anirban Basu CHOICE faculty members directed a 5-year NIH-funded study to assess the economics of Precision Medicine (PM). They used a variety of innovative HEOR approaches including value of information (VOI) analysis and discrete choice experiments (DCE) to ask two key questions: Are there different evidence thresholds for PM, and how do various stakeholders value PM?

CHOICE Senior Scientist Greg Guzauskas led a study in which we developed a novel "evidence threshold criterion" (ETC).[1] We found the ETC for clopidogrel pharmacogenomics increased over time, whereas the ETC for clopidogrel drug-drug interactions decreased over time. National recommendation bodies appear to be consistent over time within their own decision making, but had different levels of risk aversion. The ETC may be a useful metric for assessing policy makers' risk preferences and, in particular, understanding differences in policy recommendations for genomic versus clinical PM.

Josh Carlson led three DCEs on the value of PM for providers, payers, and patients.

- Providers (N=465) significantly valued reducing uncertainty in clinical benefit only when it eliminated the possibility of harm - decreased life expectancy.[2]
- Payers (N=150) exhibited a strong preference for genetic tests that improved quality of life, had high expert agreement on changing medical care, and increased life expectancy.[3] These findings suggest that payers will need evidence of clinical utility to support coverage and reimbursement of genomic precision medicine.
- Patients (N=1124) most valued survival gains, cost of testing, and medical expert agreement.[4] The predicted demand was sensitive to price when PM is first introduced and insensitive to price as the evidence base became established.

In summary, the findings from this project indicate that there will be high demand for PM that is supported by consistent evidence of clinical and patient benefit.

1. Guzauskas GF, Basu A, Carlson JJ, Veenstra DL. Are There Different Evidence Thresholds for Genomic Versus Clinical Precision Medicine? A Value of Information-Based Framework Applied to Antiplatelet Drug Therapy. Value Health. 2019 Sep;22(9):988-994. PMID: 31511188
2. Hendrix N, Regier DA, Chatterjee J, Dhanda DS, Basu A, Veenstra DL, Carlson JJ. Provider preferences for resolving uncertainty and avoiding harms in precision medicine: a discrete choice experiment. Per Med. 2020 Aug 17. PMID: 32804043
3. Dhanda DS, Veenstra DL, Regier DA, Basu A, Carlson JJ. Payer Preferences and Willingness to Pay for Genomic Precision Medicine: A Discrete Choice Experiment. J Manag Care Spec Pharm. 2020 Apr;26(4):529-537. PMID: 32223606
4. Regier DA, Veenstra DL, Basu A, Carlson JJ. Demand for Precision Medicine: A Discrete-Choice Experiment and External Validation Study. Pharmacoeconomics. 2020 Jan;38(1):57-68. PMID: 31489595

TEAMS AT UWSOP AND FRED HUTCH LOOK AT **EMERGING SICKLE CELL DISEASE THERAPIES**

Teams will model the clinical and economic burden of sickle cell disease and the potential benefits of emerging genetic therapies

In 2019, the National Institutes of Health National Heart, Lung, and Blood Institute (NHLBI) funded a unique collaborative – The Sickle Cell Clinical and Economic Impact Analysis (CEIA) Consortium, which brings together The CHOICE Institute at the UW School of Pharmacy, Fred Hutch, NHLBI, and The Emmes Corporation. The collaborative enables the two teams at The CHOICE Institute and the Fred Hutch to develop models that will provide insights into the clinical and economic benefits of cures for Sickle Cell Disease (SCD) over patients' lifetimes. The goal is to clarify the potential long-term benefits of emerging genetic therapies for this genetic disease that can become severe from infancy onward.

About 100,000 individuals in the U.S. are affected by SCD (two sickle cell genes, or one with another abnormal gene), a disproportionate percentage of whom are Black or Hispanic. About one in 13 Black or African Americans have the sickle cell trait (one sickle cell gene) and are at risk for having a child with the disease. The inherited blood disorder shortens the life spans of those affected by about 20-30 years and leads to a lifetime of medical complications.

Historically, treatments have decreased the frequency and severity of complications. More recently, some patients have been cured with bone marrow transplantation with a sibling or alternate donor, but many do not have acceptable marrow donors, and there can be serious complications. Promising new curative (gene) therapies are on the horizon, which makes the Consortium's work timely and valuable.

The project spans three years and is being conducted in four stages. In the first year, Beth Devine led the conduct of a comprehensive set of landscape analyses to inform model inputs. Members of her team included PhD student Boshen Jiao, PharmD students Zachary Baldwin and Dalyna Quach, and UW Health Sciences librarian Diana Louden. With detailed feedback from all Consortium members and a variety of stakeholder inputs, Beth's team completed five companion landscape analyses: 1) burden of SCD and its many and significant comorbidities, 2) treatments and treatment-related complications, 3) economic evaluations (medical costs, non-medical costs, cost-effectiveness analyses), 4) preference estimates used in cost-utility models of SCD, and 5) emerging gene therapies for SCD. The larger SCD expert community is eagerly awaiting the forthcoming manuscripts. "Our landscape analyses have pointed up the many gaps in the existing literature with regard to estimating the value of therapies for SCD," states Beth. "Existing models do not integrate common comorbidities, treatments and treatment complications, healthcare resource use, and quality of life outcomes. Further, preference weights used in existing models are 'borrowed' from other disease states. Finally, few existing models use a lifetime time horizon, and almost none adopt a societal perspective, which is so important for a disease that has a major impact on the life trajectory, productivity, and earnings. The model we will develop will address many of these shortcomings and will incorporate estimates of curative (gene) therapies that will soon become available."

Year 2 activities focus on the conduct of two database analyses, one using commercial claims (Marketscan) and the other using Medicare and Medicaid data. As with the landscape analyses, these will inform model inputs. The team plans additional work to compare the estimates obtained from the landscape analyses to those obtained through the database analyses. Kate Johnson and Zizi Elsisi are spearheading this effort.

To address the shortcomings in the preference literature for SCD, CEIA investigators have established collaborations with investigators at St. Jude Children's Research Hospital and at Emory University, with whom they will be working to collect utility weights that represent SCD-specific health states. They will also administer the American Time Use Survey with which to estimate productivity in SCD patients and their caregivers.

In year three, the teams will develop simulation models for patients from the age of diagnosis over their lifetimes and investigate state-specific estimates of comorbidities and complications, quality of life, health care utilization, and costs. These models will be the most comprehensive ever built for SCD in the U.S. The focus will be on the potential impact of different types of curative (gene) therapies.

The fourth and final stage of the project will involve presenting the results of the models on publically available platforms for the benefit of all stakeholders.

The researchers at the CHOICE Institute and Fred Hutch are global leaders in disease modeling, particularly for genetic diseases. The UW School of Pharmacy team is led by Principal Investigator and CHOICE Director Anirban Basu, with CHOICE Professor Beth Devine and Seattle Children's M.A. Bender serving as Co-Investigators. Fred Hutch's team is led by Dr. Joshua Roth along with Co-Investigator Dr. Scott Ramsey. Both groups have a long history of collaborative work.

"Our findings can inform the development strategies to use gene therapy to treat patients with SCD with the objectives of reducing disease complications, extending survival, and improving quality of life," says Josh Roth. "Our team is very excited to apply our expertise in economic modeling to address these important issues."

The collaborative agreement (OTA 1OT3HL152448) is funded by the NIH National Institutes of Health National Heart, Lung, and Blood Institute (NHLBI) as part of a large, multiyear national initiative to Cure Sickle Cell (CureSC). The duration of the UW OTA is 3 years and provides support in the amount of $3M.

FAILURE TO 'FLATTEN THE CURVE' **MAY KILL MORE PEOPLE THAN WE THOUGHT**

Jake Ellison, *UW News*

New research by the University of Minnesota and the University of Washington finds that every six additional ICU beds or seven additional non-ICU beds filled by COVID-19 patients leads to one additional COVID-19 death over the following week.

"A spike in hospitalization naturally leads to more deaths, but these deaths may not only come from those who are hospitalized, but also from those who should have been hospitalized but were not," said co-author Anirban Basu, a UW professor of health economics.

Results of the study, published in the Journal of General Internal Medicine, show the impact of ICU bed use remains fairly constant as ICU bed availability changes. These effects are also in line with recent literature estimates for the mortality among COVID-19 patients receiving critical care that show mortality rates increase as ICUs fill up.

What was surprising, Basu explained, was the effect of non-ICU beds. For additional seven hospitalized patients not in intensive care, one would expect about 0.5 deaths over the next seven days based on general data put out by CDC. However, this new research finds that the total number of COVID-19 deaths actually occurring is much higher.

"This may indicate that constraints in available capacity of non-ICU beds may have a spillover effect to non-hospitalized patients. In fact, the study found that the effect of non-ICU beds rises steadily as more and more non-ICU beds are occupied by COVID-19 patients," said Basu, who is also director of the CHOICE Institute at the UW School of Pharmacy.

For example, when 20% of non-ICU hospital beds are occupied by COVID-19 patients, an additional seven COVID-19 admissions to non-ICU beds will produce two additional COVID-19 deaths over the next seven days.

"Even when, say, 80% of non-ICU beds are still available, a further increase in COVID-19 admissions leads to significantly more numbers of deaths than what we would expect from only the hospitalized patients. This may be because the health care delivery within a hospital is not only driven by hospital beds but also personnel and COVID-specific supplies, which may be stretched thin, and affecting COVID-19 admission policies of the hospitals."

Consequently, Basu said, efforts to "flatten the curve" — that is, reduce or stop the increase of people infected with the novel coronavirus through public health measures such as mask-wearing and physical distancing — are more important than

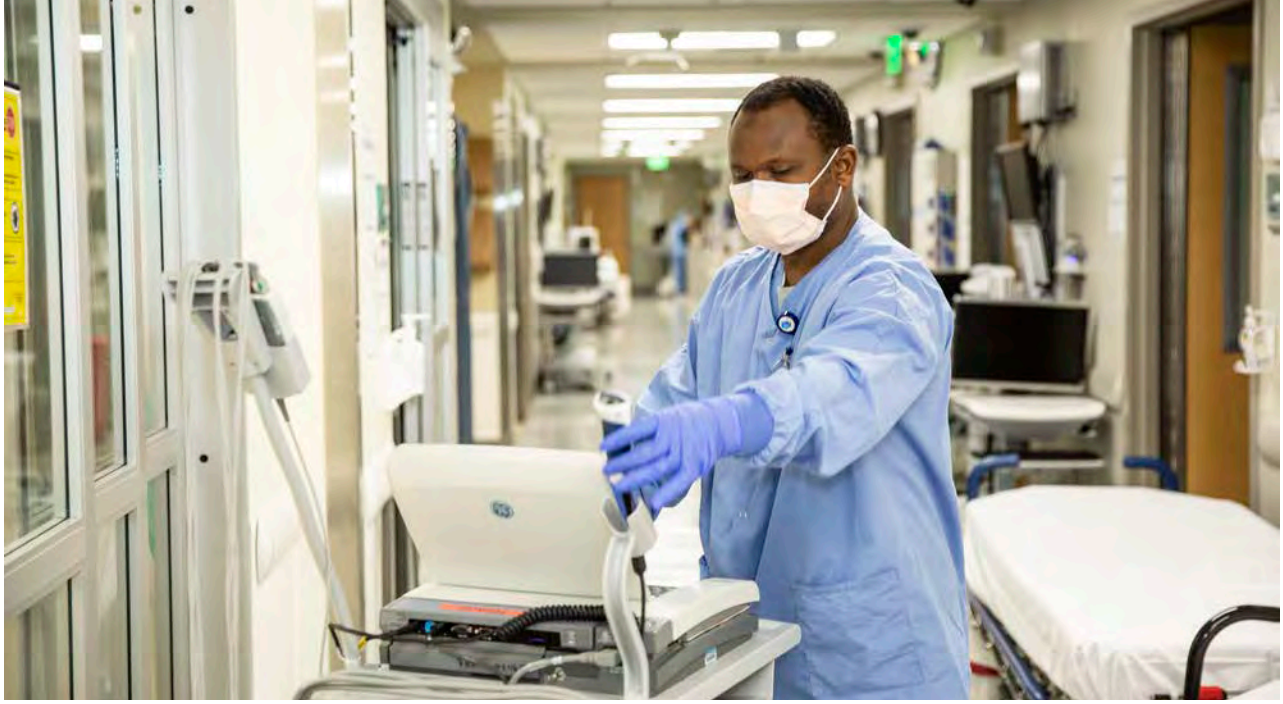
ESTIMATING THE INFECTION FATALITY RATE AMONG SYMPTOMATIC COVID-19

According to a study published in the Journal of Health Affairs, Anirban Basu, Stergachis Family Endowed Director of The CHOICE Institute at the UW School of Pharmacy, has developed one of the first models that can estimate the COVID-19 Infection Fatality Rate among symptomatic cases (IFR-S).

The Infection Fatality Rate (IFR) is a critical parameter in understanding the COVID-19 pandemic. Basu, who authored the study, says his goal for the model is to address the measurement errors associated with case fatality ratio using statistical techniques that will allow us to infer about the IFR.

"In general, the focus at the CHOICE Institute has been on knowing the current unknowns rather than forecasts," he said. "For example, the Infection Fatality Rate among those who are affected today can help to recover the evolution of likely symptomatic cases that were undetected and gain a better understanding about testing coverages."

Basu's work aligns with UW's Population Health Initiative of strengthening communities at home and abroad by delivering effective interventions with greater speed, efficiency and quality.



RESEARCHERS HAVE SHOWN AN ASSOCIATION EXISTS BETWEEN HOSPITAL BED USE AND COVID-19 MORTALITY IN AND OUTSIDE OF HOSPITALS. DENNIS WISE/UNIVERSITY OF WASHINGTON

simply keeping hospitals from becoming overwhelmed. Failure to flatten the curve, even before hospitals reach capacity, is killing more people than just those who end up in hospital beds.

"These results have very important implications as large numbers of students head back to schools and colleges across the nation and resistance to public health measures continues to stymie efforts to reduce the number of infected," Basu said.

"Our study quantifies the relationship between COVID-19 deaths and COVID-19 hospitalizations using actual data," write the study authors. "These estimates provide a better understanding of the projections of the COVID-19 pandemic in the USA especially when states are gearing up to restart economic activities and provide important practice insights for hospitals in terms of assessment of hospital bed and ICU bed capacity and preparedness."

The study's lead author is Pinar Karaca-Mandic, University of Minnesota professor and academic director of the Medical Industry Leadership Institute in the university's Carlson School of Management. The researchers used the University of Minnesota's COVID-19 Hospitalization Tracking Project to examine data from 23 states that reported daily percentages of ICU and non-ICU-bed use by COVID-19 patients. The research was partially funded by the University of Minnesota Office of Academic Clinical Affairs and the United Health Foundation.

For more information, contact Basu at basua@uw.edu.

CASES IN THE U.S.

"Our hope is that our study results can help inform local and national policies that will save lives in the future," said Basu. "Ultimately, we want this work to advance the health of people around the world."

Basu also noted that the model should not be viewed as the 'last word' on estimating the COVID-19 IFR, but as one of the several methods being used to estimate this and related values. Also, IFR estimates are inherently dynamic in nature, and regular update of these estimates using newer data should be carried out.

The School of Pharmacy and Basu have developed a website that explores the infection and fatality rates by U.S. counties for people with symptoms. For this study, 116 counties in 33 states had COVID-19 data that fit Basu's robust criteria for inclusion in the analysis.

Explore the county-by-county and national infection fatality rates using the CHOICE Institute COVID-19 Platform: https://uwchoice.shinyapps.io/covid/

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UWSOP CHOICE CREATE NOVEL NEW FRAMEWORK FOR VALUING HEALTH OUTCOMES IN COST-EFFECTIVENESS ANALYSES

Introducing "Health Years in Total:" A Novel Framework for Valuing Health Outcomes in Cost-Effectiveness Analyses. CHOICE Researchers Introduce a New metric that provides a robust and feasible approach that overcomes specific limitations of the QALY

Lawrenceville, NJ, USA—January 20, 2020—Value in Health, the official journal of ISPOR—the professional society for health economics and outcomes research, announced today the publication of an article introducing a new framework for valuing health outcomes in cost-effectiveness analyses. This new metric, "health years in total" (HYT), is a robust approach that overcomes specific limitations of quality-adjusted life-year (QALY) and equal value of life (EVL) measures. The report, "Health Years in Total: A New Health Objective Function for Cost-Effectiveness Analysis," appears in the January 2020 issue of Value in Health.

Researchers from the University of Washington developed HYT as an alternative to other frameworks for valuing health outcomes in cost-effectiveness analyses. In short, HYT equals the sum of life expectancy plus modified QALYs. The modified QALYs are calculated over a time frame corresponding to the maximum survival of any given alternative. The Value in Health article establishes a theoretical framework, provides illustrations of the use of the HYT framework, and assesses decision-making thresholds for using HYT.

Despite the importance of QALY in cost-effectiveness analyses, its potential to be discriminatory toward patients with lower quality of life presents a critical challenge that has resulted in the exclusion of the use of cost-effectiveness analyses in some public healthcare decision making in the United States. The use of the QALY in cost-effectiveness analyses has been publicly criticized, as highlighted in the Oregon Health Insurance Experiment, specific language in the Affordable Care Act barring the use of QALYs, resistance to the Institute of Clinical and Economic Review's activities, and the recent letter from the National Council on Disability to the President of the United States.

The main premise for these criticisms centers on the fact that QALYs, by definition, would value life extension for patients with lower baseline quality of life less than a similar life

extension for patients with better baseline quality of life. The National Council on Disability specifically calls for alternatives to QALY. However, alternatives to QALY, such as EVL, have not gained traction because EVL fails to recognize the quality of life gains during added years of life. And disability-adjusted life years (DALYs), recommended by the World Health Organization, have the same limitations as QALYs.

"We propose a solution that can address this specific distributional issue of QALYs without failing to account for the quality of life impacts during the added years of life," said author Anirban Basu, PhD, of The Comparative Health Outcomes, Policy, and Economics (CHOICE) Institute, School of Pharmacy, University of Washington, Seattle, WA, USA. "In this article, we introduce the framework of health years in total, which separates life expectancy effects from quality of life impacts through the use of an additive, rather than multiplicative, approach. By disentangling life expectancy impacts from quality of life effects, the HYT framework enables patients with lower quality of life to fully benefit from interventions that extend life expectancy."

The HYT framework proves a robust alternative to QALY in the use of cost-effectiveness analyses. Continued development, application, and testing of the HYT framework are needed to assess its potential for moving the field beyond the limitations of QALYs, DALYs, and EVL.

THE POTENTIAL OF VALUE-BASED DEDUCTIBLE EXEMPTIONS **IN HIGH-DEDUCTIBLE HEALTH PLANS**

In a recent post on the *Health Affairs Blog*, CHOICE Institute faculty members Douglas Barthold and Anirban Basu offer suggestions about how to change the incentive structure of high deductible health plans (HDHPs), in order to protect consumer access to the most important services, increase equity, and improve welfare. Specifically, they suggest combining the principles of HDHPs and value-based insurance design (VBID), by offering deductible exemptions for high-value services.

HDHPs covered more than 30 percent of enrollees in employer-sponsored plans in the United States in 2019, up from 4 percent in 2006. The growth of these plans is premised on the idea that HDHP beneficiaries will engage in price shopping and subsequently choose care commensurate with expected benefits of that care. The hope is that the combination of lower prices and a different mix of services could increase the value of healthcare used while also reducing costs, leading to lower premiums. Unfortunately, evaluations of HDHPs suggest that consumers neither price shop nor can they discriminate between high- and low-value care when facing high deductibles; accordingly, they reduce use of both essential and inessential services.

The lack of the hoped-for response to HDHPs (price shopping and reduction in unnecessary care only) may stem from a lack of price transparency, inability to pay for essential care during the deductible phase, or inadequate information about the value of alternate health care services and technologies. This lack of information makes it difficult to choose which services to purchase and which to forgo. For this reason, Barthold and Basu suggest a variation on VBID, in which deductible exemptions for established high-value services would inform and incentivize beneficiaries to use the most valuable care, while disincentivizing low-value options.

To date, most applications of VBID have focused on applying such designs to copays but not to deductibles. Moreover, most applications have applied reduced cost sharing for targeted high-value drugs, and only a few have also implemented concomitant increased cost sharing for low-value drugs. This means that the cost differences that the consumers faced between high- and low-value products continued to be small. Consequently, results of such applications show the promise of VBID, but to a limited scale, owing to the relative inelasticity of demand for care related to small copay variation. Tying value-based cost sharing to deductibles could generate a bigger "nudge" to align use with value, and therefore achieve the goals of both low costs and high value of healthcare delivery. In addition, such a policy could improve equity by ensuring that all beneficiaries have access to the highest-value services, even in the deductible phase of a benefit package.

STUDENTS AND **FELLOW UPDATES**

Woojung Lee, 3rd year CHOICE PhD student, was selected to receive two fellowship awards in support of her research on aging populations. Woojung received the UW Retirement Association Patricia Dougherty Fellowship in Aging and the Plein Endowment for Geriatric Pharmacy Research for 2020-2021. She was selected not only for her outstanding academic merit, but for her niche research to help better serve older adults. Woojung is pursuing research regarding issues and disparities around the lack of geriatric-specific clinical/economic evidence in the oncology space and proposed potential studies on the value of geriatric-specific evidence, heterogeneity of treatment effects and economic value of a drug in older adults, and ways to incorporate this patient population in the evidence generation process. Through her work, she hopes to identify room for improvement in generating and using geriatric-specific information and contribute to the provision of higher-value treatment to older adults, better incorporating their unique characteristics.

Woojung passed her comprehensive PhD qualifying exams this June and is looking forward to focusing on refining her dissertation topic and submitting a short proposal.

2020 RECIPIENTS OF THE LOUIS SR. AND MARILYN GARRISON ENDOWED PRIZE IN HEALTH POLICY AND ECONOMICS

The Louis Sr. and Marilyn Garrison Endowed Prize in Health Policy and Economics is intended to recognize annually an outstanding research paper in the area of health policy and economics. Professor Emeritus Lou Garrison and his wife Fran established this fund in 2008 in fond memory of his parents Louis P. Garrison, Sr., and Marilyn J. Garrison, who were great believers in the value of education and science. This year we had 7 submissions and ultimately awarded the prize to two recipients. Congratulations, Sam and Boshen!

Samuel Hong, PharmD, MS

UW/GENENTECH
POSTDOCTORAL FELLOW
2019-2021

PAPER TITLE: *"Cost-utility analysis of ruxolitinib versus best available therapy for the treatment of hydroxyurea resistant/intolerant polycythemia vera without splenomegaly in the United States"*

Boshen Jiao, MPH

3RD YEAR CHOICE
PHD STUDENT

PAPER TITLE: *"The Challenge of Value-Based Pricing in Combination Therapy:The Case of Trastuzumab and Pertuzumab in HER2+ Metastatic Breast Cancer"*

RECIPIENT OF THE 2020 UW SCHOOL OF PHARMACY GRADUATE STUDENT LEADERSHIP AWARD, DEPARTMENT OF PHARMACY

Brennan Beal, PharmD, MS

UW/ABBVIE POSTDOCTORAL FELLOW 2019-2021

Brennan Beal was selected as the 2020 Department of Pharmacy Recipient of the UW School of Pharmacy Student Leadership Award. Brennan is the first MS student to receive this award, which speaks to the outstanding contributions to the CHOICE program in just one short year. Brennan joined us in July 2019 as one of our AbbVie (formerly Allergan) HEOR fellows, coming from his PharmD program in the University of North Carolina, Chapel Hill.

In addition to excelling in the rigorous coursework required to earn a Master's degree in nine months, Brennan immediately used his existing programming skills and knowledge of HEOR to the benefit of his fellow students and the broader field. Brennan has written several technical articles for the CHOICE blog, Incremental Thoughts, and was the first to propose and implement an interactive design to make ideas come to life for readers. One of these blogs went on to be featured in the commentaries section of a well-known modeling group's website (DARTH), demonstrating his contributions not only to the UW community, but his ability to gain recognition and engage leaders on behalf of the program.

Brennan then embraced the position as technical lead in creating the R Shiny app for the CHOICE digital tool to evaluate real-world evidence for healthcare decision making by payers: *"REAdi (Real-World Evidence Assessments and Needs Guidance Tool: A Framework for Evaluating Real-World Evidence)"*. Developed as a project funded by the School of Pharmacy Corporate Advisory Board Health

Tech Fund, Brennan took this project to a new level, enhancing the technical capabilities and usability, thereby providing the opportunity for more widespread adoption by the HEOR community. He and the REAdi Tool team presented their work in the CHOICE seminar, as well as recently at the R Medicine 2020 conference. He has also taken the initiative to co-teach our summer training program, "Marketscan programming bootcamp – with introductions to R and SAS" for incoming MS Fellows and PhD students. Stepping forward to contribute to this training and mentorship is a testament to Brennan's overall commitment to leadership. Brennan was aptly described by one of his nominators as having an "appetite for leaving a place better than he found it, his willingness to step up when he has the skillset to do so, and his passion for the university, and university values".

Brennan completed his MS program in June and submitted his thesis titled, "Comparing healthcare resource use and costs for patients with Normal Tension Glaucoma across levels of severity: a nationally representative sample of commercially insured US adults age 40 and older." Dr. Beth Devine served as his thesis chair and Dr. Dave Veenstra was also on his thesis committee. Brennan is entering year 2 of his HEOR fellowship at AbbVie and we look forward to seeing him continue to thrive in the second phase of his fellowship. Congratulations, Brennan!

STUDENT UPDATES

Shuxian Chen completed a Data Science internship this summer at Facebook in Infrastructure Strategy, where she is working on identifying appropriate metrics to monitor Ads Ranking model performance.

Yilin Chen presented at the virtual ISPOR 2020 poster session with Dr. Josh Carlson on the Proportional shortfall – an alternative approach to QALY estimation within economic evaluation. Yilin has worked on various exciting research projects throughout her first year with Drs. Josh Carlson, Aasthaa Bansal, and Lou Garrison. This summer she began work as an RA with Dr. Carlson and the ICER team to support evaluating the cost-effectiveness of a new oral HIF-PHI drug for anemia in chronic kidney disease. She also received a travel grant to attend the HTAi 2020 Annual Meeting.

Samantha Clark was nominated for the 2020 Graduate Student Leadership Award. In October, she presented at the Society of Medical Decision Making (SMDM) North America Conference in on "Characterizing Longitudinal Patterns of Tyrosine Kinase Inhibitor Adherence in Patients with Newly Diagnosed Chronic Myeloid Leukemia". Samantha is continuing in the second year of her Developing Data-Driven Cancer Researchers (3DCR) Training Grant Award with Fred Hutch. Over the summer, she co-led the summer Marketscan bootcamp for incoming graduate students. Samantha serves as a CHOICE student body representative, ISPOR chapter secretary, and master of ceremonies at weekly CHOICE happy hours.

Nathaniel Hendrix presented an aim of his dissertation research at the virtual ASCO Annual Meeting, titled "Provider preferences for attributes of artificial intelligence in breast cancer screening: A discrete choice experiment".

Shangqing (Joyce) Jiang has developed research interests in genomic sequencing by working with Dr. Beth Devine and Dr. David Veenstra. In addition, Joyce has also gained experience in the disease area of hepatitis C by working with Dr. Zachary Marcum. In the upcoming academic year, she will continue her research in economic evaluation of genomic sequencing in various disease areas and explore topics in investigating hepatitis C medications.

Boshen Jiao completed a landscape analysis for sickle cell disease (SCD) with Dr. Beth Devine through his RA work. He also completed an independent study with Dr. Anirban Basu, where they developed a conceptual framework and a U.S. catalogue of healthcare costs to inform the calculation of future costs. Boshen also built an online user interface to visualize the results. He gave a podium presentation at SMDM on "Catalogue of age and medical-condition¬-specific healthcare costs in the US to inform future costs calculations in cost-effectiveness analysis". Additionally, he presented at the Cancer Intervention and Surveillance Modeling Network (CISNET) Annual Meeting on the "Cost-effectiveness of reflex testing men with intermediate prostate specific antigen levels".

Sara Khor has been working with Dr. Aasthaa Bansal to examine racial biases in colorectal cancer recurrence prediction algorithms. She has worked over the summer with Dr. Veena Shankaran's team at the Fred Hutch to examine the relationship between cancer diagnosis and financial hardship. She gave an oral presentation on the results of this work at the Academy Health 2020 Annual Research Meeting this summer. She also took on the role as the editor for the CHOICE student blog. Sara is an AHRQ T32 fellow for 2019-2021.

Erik Landaas successfully completed his general exam this past fall and accepted a full-time position as the Director of Health Technology Assessment at UW Medicine. He will be presenting a short course at ISPOR Europe, entitled, "Early-Stage Health Technology Assessment." alongside CHOICE affiliate faculty, Drs. Will Canestaro and Lotte Steuten. He is nearing completion of his PhD program and two of his dissertation aims have been accepted for publication.

Enrique Saldarriaga served as the UW ISPOR Student Chapter President this past year and is currently the Department of Pharmacy Graduate Representative in the School of Pharmacy Senior Leadership Committee and the Diversity, Equity, and Inclusion Council. This year, he received a scholarship to attend the 2020 Online Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID).

Naomi Schwartz completed two Washington Research Foundation (WRF) Fellowships. Her first project was in partnership with the UW Institute for Protein Design, where she developed a decision-analytic model designed to provide insight into the potential cost-effectiveness of a novel oral cyclic peptide treatment for Crohn's Disease. Her second project was a Comparison of the Cost-Effectiveness of Two Sepsis Screening Strategies. Naomi also presented a virtual poster at ASCO on "The potential cost-effectiveness of a risk-based pancreatic cancer screening strategy in new-onset diabetes". Naomi serves as one of the CHOICE student body representatives.

Lauren Strand successfully completed her General Exam in November and is finalizing her dissertation on understanding longitudinal trends of cannabis substitution for prescription drugs. In April, she completed a WRF Fellowship where she completed an early phase technology assessment for the UW Institute for Protein Design. Her WRF project consisted of a discrete event simulation to estimate costs and outcomes of currently available therapies in idiopathic pulmonary fibrosis, a rare and costly form of lung disease. She also estimated the value of a potential new therapeutic in this disease area.

Jacinda Tran was elected as the incoming ISPOR Student Chapter President. She is also serving on the Publications Committee for the ISPOR Student Network and staying true to her roots by serving on the UCLA Alumni board. Jacinda is an ARCS Foundation Scholar and AHRQ T32 fellow and will continue these fellowships in the upcoming year. This year, Jacinda has been working with Drs. Christine Khosropour (Dept of Epidemiology) and Monisha Sharma (Dept of Global Health) on microcosting and building a budget impact model for a HIV PrEP telehealth intervention in Mississippi. Additionally, over the summer has been working with Doug Barthold, Jennifer Bacci, and Don Downing on a project involving pharmacist scope of practice laws over the last decade.

Tricia Rodriguez passed her general exam this year under the guidance of her exceptional chair, Dr. Aasthaa Bansal. Her dissertation work focuses on developing a new risk prediction model for mortality in Cystic Fibrosis and evaluating the clinical utility of using the model for lung transplant referral decisions. She presented at ISPOR 2020 on her dissertation research: A Machine Learning Approach to Predicting Mortality in Cystic Fibrosis. Separately, her work on modeling the cost-effectiveness of dual HIV/syphilis rapid diagnostic testing in pregnancy was used as part of WHO's 2019 global testing guidelines.

Wei-Jhih Wang was nominated for the Outstanding Dissertation Award for her dissertation, Mimicking Clinical Trials Using Real-World Data - A Novel Method and Applications.

Sabra Zaraa is working as an RA for the "Community Pharmacist Epilepsy Services Program" and is supporting systematic review and interview data analysis work. Additionally, Sabra was involved in the development and language adaptation of data collection instruments for the The Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program project in Mozambique, implementing the active monitoring plan in Mozambique of tenofovir/lamivudine/dolutegravir (TLD) in HIV/TB patients.

FACULTY UPDATES

Aasthaa Bansal, PhD

- Invited talk at International Conference on Health Policy Statistics, American Statistical Association, San Diego, CA, January 2020. Title: A value of information framework for personalizing the timing of biomarker collection
- Dr. Bansal has been focusing on developing value of information methods for personalizing the timing of surveillance testing in cancer survivors, and applying the methods to EHR data from Kaiser Permanente. This is in collaboration with CHOICE faculty Anirban Basu and Dave Veenstra, and CHOICE students Samantha Clark, Tricia Rodriguez and Sara Khor.

Jennifer Bacci, PharmD, MPH, BCACP

- Award: 2019 Washington State Distinguished Young Pharmacist of the Year; Grants: "Readying Pharmacies to Participate in COVID-19 Testing and Vaccination in Washington State" funded by UW PHI (J. Bacci, PI) and "Testing a Multimodal Communication Strategy to Support Pharmacy-located HPV Vaccination" funded by Fred Hutch/ University of Washington Cancer Consortium (P. Shah, PI)

Doug Barthold PhD

- Co-Director of PHEnOM Seminar Series
- Podium speaker at ACT Symposium 2019: "Alzheimer's disease related neuropathology among patients with medication treated type 2 diabetes in a community-based autopsy cohort"
- Dr. Barthold's work this year has increased focus on the connection between health policies and the burden of chronic disease in the process of healthy aging, with particular attention on dementia. This will include studies that model relationships between health insurance design, the management of cardiovascular and metabolic health, and risk of dementia.

Anirban Basu, PhD

- Completed sabbatical at the London School of Hygiene and Tropical Medicine (LSHTM), Autumn 2020.
- Began his 4-year term in October from 2019 – 2023 as a member of the Editorial Advisory Board for Value in Health Journal.Noteworthy Presentations
- Anirban Basu and colleagues published a commentary in the American Journal of Managed Care Pharmacy on the need to lay a clear path for incorporating reliable evidence on heterogeneity in value assessments to improve their applicability for healthcare decision making. Read the commentary>>
- Estimated Covid-19 infection fatality ratio for symptomatic cases (https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2020.00455) and developed Covid-19 CHOICE platform (https://uwchoice.shinyapps.io/covid/). Discussion of results found in (https://www.geekwire.com/2020/statistician-argues-covid-19-numbers-hint-staggering-number-deaths-ahead/)
- Invited Plenary speaker for the virtual ISPOR 2020 Plenary Session titled, On The Road To Enhanced Cost-Effectiveness Analysis- New Directions, New Milestones
- Won Outstanding Graduate Mentor Award School of Pharmacy 2020

Josh Carlson, MPH, PhD

- Dr. Carlson's research focus this year has been on economic evaluation of medical technologies and the use of the QALY and other health metrics in value assessment.
- Grant: ICER Economic Modeling 01/01/20 - 12/31/21

Beth Devine, PharmD, MBA, PhD

- Lead co-Investigator, Cure Sickle Cell: Model for Economic Analysis of Sickle Cell (CureSC: MEASURE). NHLBI (PI: Basu/ Roth). 2019-2022.
- Lead co-investigator, Randomized trial of genomic testing methods for primary care patients. (PICNIC). NIH/NHGRI (PI: Bowen), 2020-2024
- Lead co-investigator. Payer Demand for Real-World Evidence in Health Economic Information Communication from Industry: A Discrete Choice Experiment. Health Technology Fund, UW Outcomes Corporate Advisory Board, 2018-2020.
- Awarded US Fulbright Scholarship to study at the University of Murcia, Spain (Spring 2021)
- Member by competitive re-appointment, AcademyHealth Methods & Data Council. (2020-2023)
- Presentation for UW Clear Center with Ashley Cha and Yilin Chen: "Microvascular Benefits of New Anti-Diabetic Agents: A Systematic Review and Bayesian Network Meta-Analysis of Renal Outcomes". July 2020.
- Presentation at the Northwest Pharmacists Association Annual Convention: "Demonstrating the Feasibility of using Pharmacogenomic-Guided Medication Therapy Management in Retirement Communities". Speakers: J. Wilson-Norton, T. Mikes, L. Chaitesipaseut. May 2020.

Louis Garrison, Jr., PhD

- Interviewed by the Journal of Clinical Pathways in June 2020, Identifying and Addressing Multi-Stakeholder Gaps in Value Assessment: https://www.journalofclinicalpathways.com/news/identifying-and-addressing-multi-stakeholder-gaps-value-assessment
- Co-authored opinion piece for STAT. Covid-19 and remdesivir: rethinking how we measure a drug's 'value'. 15 June 2020. https://www.statnews.com/2020/06/15/remdesivir-covid-19-rethinking-measure-drug-value/
- Presented at ISPOR Latin America. "Managed Entry Agreements in LatAm: An Academic Health Economist's Perspective". ISPOR Latin American Meeting. FIFARMA Symposium Bogota, Colombia, Sept. 14, 2019
- Panel speaker at Virtual ISPOR 2020: International reference pricing: US vs. rest of world—who is shooting whose foot? Commentary and summary can be found here: https://www.centerforbiosimilars.com/conferences/conference-coverage/international-reference-pricing-gets-thumbs-down-from-ispor-panel
- In January, Professor Emeritus, Lou Garrison, was appointed co-chair of Policy Outlook Committee of the ISPOR Health Science Policy Council.

Shelly Gra , PharmD, MS

- Dr. Gray was invited to take part in the provider training course developed by the Centers for Disease Control and Prevention: "STEADI: Empowering Healthcare Providers to Reduce Fall Risk"
- Through her work as Director of the Plein Center for Geriatric Pharmacy Research, Education and Outreach, has been developing a new series of senior-specific communications to help seniors navigate pharmacies in the age of social distancing. https://sop.washington.edu/educating-our-seniors-during-a-pandemic/

Ryan Hansen, PharmD, PhD

- Promotion to Associate Professor, July 2020.
- Dr. Hansen's research over the past year has included a number of efforts around opioid harm reduction, working on a bi-coastal randomized controlled trial investigating community pharmacy naloxone expansion, participating with colleagues from the school of public health on a contract evaluating the use of prescription drug monitoring programs, and most recently working as part of one of their ICER-funded modeling teams to estimate the value of supervised injection facilities. He has also been working with Jennifer Bacci, Peggy Odegard, Aasthaa Bansal, and Zach Marcum on a trial expanding the utilization of lipid treatment for people with diabetes through a community pharmacy-based intervention. And finally, working with Larry Kessler, Donald Patrick, and Laurie Gold, they are conducting several cost-effectiveness and comparative effectiveness analyses in cystic fibrosis.

Zachary Marcum, PharmD, MS, PhD

- Dr. Marcum presented at the plenary paper session at the American Geriatrics Society Annual Scientific Meeting in May.
- Marcum ZA, van Dalen JW, Gray SL, Barthold D, Moll van Charante EP, van Gool WA, Crane PK, Larson EB, Richard E. Angiotensin-II Stimulating Antihypertensives are Associated with Lower Incident Dementia Rates in Community-Dwelling Older Adults. American Geriatrics Society Annual Scientific Meeting, Plenary Paper Session. Long Beach, CA, May 2020.

Andy Stergachis PhD, BPharm

- Appointed Interim Director, Biomedical Regulatory Affairs Program.
- Co-Investigator and Member of the Executive Leadership Committee. Washington Entrepreneurial Research Evaluation and Commercialization Hub. (Ho, Rodney Y, PI) NIH/NHLBI, 2019-2021.
- Presentation: the following Planning for Pharmacovigilance in Countries: Why It Is Critical? Mitigating Medical Product Risks and Building Trust: How Pharmacovigilance Systems Serve during Pandemics and Beyond. MTaPS Global Learning Series Webinar for USAID. 12 August 2020.
- Invitee. Coalition for Epidemic Preparedness Innovations (CEPI) Workshop on Maternal Immunization against Emerging Infectious Diseases. London, UK. 12-13 February, 2020.
- In 2020, final reports were released from two committees that I served on for the National Academy of Medicine: "Evidence-Based Practices for Public Health Emergency Preparedness and Response" and "Assessment of Long-Term Health Effects of Antimalarial Drugs When Used for Prophylaxis."
- Through the USAID-funded Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program, I traveled to and co-led the following projects in 2019: Dar es Salaam, Tanzania, on national antibiotic consumption and use; Maputo, Mozambique, on active monitoring of patients treated for HIV with tenofovir/lamivudine/dolutegravir; and Tokyo, Japan, on Western-Pacific regional pharmacovigilance systems strengthening.

Sean D. Sullivan, BScPharm, MSc, PhD

- Accepted second term as UWSOP Dean. Dean Sullivan has led our school through the uncertainties of this global pandemic and we look forward to his continued steadfast leadership.
- Spoke at the London School of Economics, Seminar in Pharmaceutical Policy in February. The title of his talk was "Pharmaceutical Policy Development: Is the USA Headed Toward a European model?"
- Elected as Treasurer on ISPOR Board of Directors, 2020-2024.
- Dean Sullivan spoke in July with the Washington State Senate Committee on Health Care to discuss the state's health care workforce pipeline, citing urgent needs in areas such as low vaccine rates and reduced access to care amongst non-COVID patients. Read more: https://sop.washington.edu/uwsop-dean-sean-sullivan-meets-with-washington-state-senate-committee-to-discuss-health-care-workforce-challenges/

David Veenstra, PharmD, PhD

- Co-Investgator (along with Beth Devine) on following grant to UW (Gail Jarvik and David Crosslin, PIs) for a diverse population clinical site in the eMERGE-4 network:
- The National Institutes of Health has announced the provision of funding over five years for the Electronic Medical Records and Genomics (eMERGE) Genomic Risk Assessment and Management Network, which establish protocols and methodologies for improved genomic risk assessments for diverse populations and to integrate their use in clinical care. The eMERGE Network is supported by the National Human Genome Research Institute (NHGRI), part of NIH. The funding will build upon the existing eMERGE Network to support both a coordinating center and clinical sites specifically focused on better understanding disease risk and susceptibility by combining genomic and environmental factors and investigating how future findings can be used to help clinicians and patients manage disease risk.

AFFILIATE FACULTY UPDATES

We are pleased to welcome several new Affiliate Faculty to the CHOICE Institute who were voted in this past year.

Jens Grueger, MS, PhD

- Affilate Professor
- Director and Partner, Boston Consulting Group, Zurich, Switzerland
- President of ISPOR, The Professional Society for Health Economics and Outcomes Research (2020-2021)

Zsolt Hepp, PharmD, MS

- Affilate Assistant Professor
- Director, Global Health Economics and Outcomes Research, Seattle Genetics

Amy Tung, PharmD, MS

- Affiliate Asistant Professor
- Associate Director, Health Economics Outcomes Research, AbbVie

Jennifer Whiteley, EdD, MSc, MA

- Affiliate Associate Professor
- Head, Neuroscience & Rare Disease Evidence for Access (E4A), Genentech, Inc.

Affiliate Assistant Professors and CHOICE alums, **Drs. Carrie Bennette and Marita Zimmermann**, both work at the Institute of Disease Modeling (IDM) in Seattle. IDM has worked closely with policy and decision makers throughout the COVID-19 epidemic. The research agenda at IDM for COVID-19 has included agent based modeling used for projecting the impact of policies such as contact tracing and school reopening, compartmental modeling used for projecting transmission in Washington state and elsewhere, analysis of trials of vaccines and treatments, examining heterogeneities and inequities in outbreaks, and more. IDM has issued more than 50 COVID-19 focused reports as well as created open source modeling code and peer-reviewed publications. In particular, Dr. Marita Zimmermann has led work on tradeoffs of economic reopening, racial inequities in transmission, and understanding responses to non-pharmaceutical interventions. Additionally, Dr. Carrie Bennette has led work on vaccine trials, equity, and data visualizations. IDM work is used in weekly advising to policy makers, as well as other organizations such as Universities.

The IDM interactive model platform and reports can be accessed here: https://covid.idmod.org/#/

Affiliate Assistant Professor and CHOICE alumna, **Dr. Blythe Adamson** has been in the national forefront of COVID-19 policy guidance and research.

- In May, Dr. Adamson completed 40 days of volunteer service with the White House Coronavirus Task Force alongside Dr. Anthony Fauci, which oversees the Administration's efforts to monitor, prevent, contain and mitigate the spread of COVID-19
- Adamson is continues to work with the NIAID COVID Prevention Network (CoVPN) to support predictive analytics for Phase 3 vaccine trials
- Adamson is an advisor at Testing for America, a non-profit group of scientists, academics, and business leaders working to scale testing for COVID-19
- Adamson is a member of the COVID Sports and Society Working Group providing guidance to professional sports leagues and colleges, co-led by the NBA and former CMS administrator Andy Slavitt

William J. Canestaro, PhD '17

William J. Canestaro, CHOICE PhD alum and Affiliate Assistant Professor was selected as the inaugural recipient of the University of Washington School of Pharmacy Early Career Achievement Award. Will was honored at the 125th Celebration in June for his achievements in the field of pharmacy. Will works closely with CHOICE as an Affiliate Assistant Professor and Managing Director of the Washington Research Foundation. Will was also recognized earlier in the year by being nominated as a 2019 Health Innovation Northwest Seattle Health Innovators and a Puget Sound Business Journal 40 Under 40. Read more: http://wrfseattle.org/willcanestarolegendaward.php

Zsolt Hepp, PharmD '12, MS '13

New Affiliate Assistant Professor Zsolt Hepp, PharmD '12, MS '13 was promoted to Director of HEOR at Seattle Genetics in November 2019.

CHOICE FACULTY IN THE NEWS

- **Dr. Andy Stergachis**, was quoted in the following article: What will the sports fan's experience look like after coronavirus? Boston Globe. April 17, 2020, https://www.bostonglobe.com/2020/04/17/sports/what-will-sports-fans-experience-look-like-after-coronavirus/
- **Dr. Josh Carlson** was quoted in the Los Angeles Times column discussing the Trump administration's drug pricing policies. Ariticle: Trump's pathetic plan to fix drug pricing. LA Times. 3 Dec 2019, https://www.pressreader.com/usa/los-angeles-times/20191203/281848645467844
- Affilate Assistant Professor, **Dr. Marita Zimmermann**, was interviewed in the B.Next Outbreak Analytics & Forecasting series podcast about the critical need for disease modeling and how it's used to understand which people are at risk for COVID-19 and determine public health interventions to minimize their risk. The podcast can be accessed here https://iqt.podbean.com/e/advanced-concepts-in-outbreak-analytics-modeling-with-dr-marita-zimmermann/
- Affiliate Assistant Professor, **Dr. Blythe Adamson** was quoted in the following article by The Atlantic, The Plan That Could Give Us Our Lives Back, How to Test Every American for COVID 19 Every Day. The Atlantic. 14 Aug 2020. https://www.theatlantic.com/health/archive/2020/08/how-to-test-every-american-for-covid-19-every-day/615217/
- **Dr. Adamson** also wrote an opinion piece for USA Today titled, Epidemiologist: Schools need to reopen now. Here's how to do it safely. USA Today. 10 July 2020. https://www.usatoday.com/story/opinion/2020/07/10/how-americas-schools-can-reopen-safely-now-epidemiologist-column/5404346002/
- **Dr. Anirban Basu** was interviewed in July by the Northwest News Network on the accuracy of reported COVID-19 fatalities in the Pacific Northwest: https://www.nwnewsnetwork.org/post/official-covid-19-fatalities-may-undercount-pandemics-death-toll-many-hundreds-pacific-nw

THOMAS K. HAZLET, PHARMD, DRPH ANNOUNCES RETIREMENT FROM UNIVERSITY OF WASHINGTON SCHOOL OF PHARMACY

After 24 years of distinguished service to the students, faculty and staff at the University of Washington School of Pharmacy, Professor Thomas Hazlet will retire on July 1st, 2020. Over the course of his noteworthy academic career, Tom has made many substantial contributions to the Department, School and University as a trusted colleague and Founding Director of the UW Biomedical Regulatory Affairs Program (BRAMS). In 1996, Tom joined the faculty of the University of Washington School of Pharmacy as an Assistant Professor. He served in this role until 2001 when he was promoted to Associate Professor. In addition, Tom serves as a member of the adjunct faculty of the UW Department of Health Services and UW School of Law.

Tom was among the first at the UW who recognized the need to strengthen the professional workforce to support the region's medical products manufacturers, research institutions, and regulatory agencies. Starting with developing certificate programs in Biomedical Affairs and in Clinical Trials, Tom then began, in conjunction with the Continuum College, the Master of Science degree program in Biomedical Regulatory Affairs or BRAMS. He served as the Director of BRAMS from its inception through 2019. Unique features of BRAMS includes its breadth of focus on drugs, biologics, and medical devices; its practicum that provides practical experience to students; and the availability of a part-time and full-time option. BRAMS graduates hold responsible positions with many of the leading life sciences companies and organizations.

Over the course of his tenure at UW, Tom has served the University, School, Department and Community with distinction. Known for his good humor, enthusiasm for teaching, dedication to service of the Pharmacy community, and his remarkable knowledge of regulatory affairs, Tom is an outstanding educator and colleague.

In addition to his ardent service to the University of Washington, Tom is a dedicated member of the pharmacy community, serving in a number of diverse roles including Special Government Employee to the U.S Food and Drug Administration. In this role, Tom served as a member of the Drug Safety and Risk Management Advisory Committee of the FDA. Tom also served as the University of Washington Representative for the United States Pharmacopeia, a position he held since 2009. He continues to serve as a peer reviewer for a number of scientific journals including: American Journal of Health-System Pharmacy, Annals of Pharmacotherapy, Journal of the American Medical Association, Clinical Therapeutics and The American Journal of Managed Care to name a few. Tom received the Washington State Pharmacy Association's David Almquist Award in 2019.

Join us in congratulating Tom on the impact he has made to the School, University and greater community as an educator, scholar and valued colleague.

STAFF UPDATES

This year brought some staff changes to the CHOICE team. Anthony Morgan (Morgan) departed CHOICE and the role of Research Project Manager. Morgan played an integral part of CHOICE and, as our first research project manager, shaped it into a robust position. Morgan will be joining an MPH program at Johns Hopkins University and we wish him the very best. Our new Research Project Manager, Connor Henry , joined us in April. Connor is a native Seattleite and earned degrees in psychology (BA) and Public Health (MPH) at UW. For the past six years he has worked on a variety of research projects as a Clinical Research Coordinator for the Kidney Research Institute at Harborview Medical Center. In his free time he enjoys playing the guitar, running and spending time with friends and family. He has already made a great impact on the CHOICE operations despite the challenges of beginning a new position in a fully remote environment. Welcome, Connor!

CONNOR HENRY

ALUMNI UPDATES

Mark Bounthavong, PharmD, PhD '18

Mark Bounthavong, PharmD, PhD '18 made an Associate Editor for Substance Abuse journal (SAj). SAj offers wide-ranging coverage for healthcare professionals, addiction specialists and others engaged in research, education, clinical care, and service delivery and evaluation. SAj has an impact factor of 2.98 in 2019 and is one of the leading journals on substance abuse research. He will be the only associate editor who is a pharmacist or health economist.

Amy Cizik, PhD '16

Amy Cizik, PhD '16 joined the University of Utah School of Medicine in October 2019 as a Research Assistant Professor

Jamie Cross, PhD, '09

Since founding Cross BioStrategies LLC in 2019, Jamie has been consulting in regulatory affairs and drug development for nearly a dozen biotech/pharma companies from China to the UK and places in between. Over the past year, he has helped move three Phase 1-2 and three Phase 3 studies into the clinic, obtained Fast Track or Orphan Drug status for several products, and prepared teams across multiple disease areas for FDA and EMA meetings. His most recent project is seeking to accelerate a potential COVID-19 therapy into the clinic.

Shalak Gunjal, MS '19

Shalak Gunjal, MS '19 joined Novartis as a Manager in Global Patient Access Solutions.

Thomas Hopkins, PharmD, MS '19

Thomas Hopkins, PharmD, MS '19 joined Takeda Pharmaceuticals as a Senior Manager, Global Evidence and Outcomes – Gastroenterology.

Ashley Kim, PharmD, MS '19

Ashley Kim, PharmD, MS '19 joined GRAIL, Inc as a Senior Manager, Health Economics & Outcomes Research.

Dr. Meng Li '18

Dr. Meng Li '18 has accepted a tenure-track assistant professor position in health services research at MD Anderson Cancer Center.

Eddie Neuberger, PharmD, MBA, MS '19 and **Jamie Ta**, PharmD, MS '19

Eddie Neuberger and Jamie Ta started positions at Genentech as Associate Health Economists.

Julia Slejko, PhD, (PORPP Postdoc Alum, 2014)

Julia Slejko is now Co-Director at the Patient-Driven Values in Healthcare Evaluation (PAVE) Center at the University of Maryland School of Pharmacy.

Jonathan H. Watanabe, PharmD, Ph.D., '08, '12

Jonathan H. Watanabe was appointed to the planning committee for the National Academies of Sciences, Engineering, and Medicine August workshop, Drug Research & Development for Older Adults. He also served as a Moderator at the National Academies Health and Medicine Division public session of the Committee on the Implications of Discarded Weight-Based Drugs on April 29, 2020 mandated by the US Congress and sponsored by the Centers for Medicare and Medicaid Services.

Jonathan Campbell, PhD '07,

TO BE SENIOR VP FOR HEALTH ECONOMICS AT ICER

In September 2020, CHOICE alum Jonathan D. Campbell, PhD, will become Senior Vice President for Health Economics at the Institute for Clinical and Economic Review (ICER). Having collaborated with ICER closely over the past five years, Campbell will oversee the growth of ICER's health economics team and lead in the future innovation of ICER's value assessment methodology. In addition, he will continue to build ICER's relationships with health economists around the country and with health technology assessment (HTA) agencies around the world.

Campbell says his education at UW helped inspire and influence his professional path. "I received education and mentorship from some of the world's best researchers in the field of health economics and outcomes research," he said. "I was encouraged to think deeply about health economics topics that matter, but to also not lose sight of the bigger picture. This ICER appointment would not have been possible without UW."

Since graduating in 2007, Campbell has remained an active research collaborator with UW faculty and continues to lean on his UW mentors. "UW is a key academic collaborator to ICER in the economic modeling space," he noted. "I look forward to the opportunity to work closely with UW faculty and researchers in my new leadership role at ICER."

FACULTY PUBLICATIONS

Augusto O, **Stergachis A**, Dellicour S, Tinto H, Valá A, Ruperez M, Macete E, Nakanabo-Diallo S, Kazienga A, Valéa I, d'Alessandro U, Ter Kuile FO, Calip GS, Ouma P, Desai M, Sevene E. First trimester use of artemisinin-based combination therapy and the risk of low birth weight and small for gestational age. Malar J. 2020 Apr 8;19(1):144.

Duarte HA, Babigumira JB, Enns EA, et al. Cost-effectiveness analysis of pre-ART HIV drug resistance testing in Kenyan women. *EClinicalMedicine*. 2020;22:100355. Published 2020 May 22. doi:10.1016/j.eclinm.2020.100355

Bansal A, Heagerty PJ (2019). A comparison of landmark methods and time-dependent ROC methods to evaluate the time-varying performance of prognostic markers for survival outcomes. Invited article, Diagnostic and Prognostic Research, 3: 14. https://doi.org/10.1186/s41512-019-0057-6

Bansal A, Mayer-Hamblett N, Goss CH, Chan LN, Heagerty PJ (2019). Evaluating the value of updating markers over time for risk prediction in cystic fibrosis. Epidemiology (Sunnyvale), 9: 375.

Bansal A, Sullivan SD, Lin V, Purdum A, Navale L, Cheng P, **Ramsey SD** (2019). Estimating long-term survival for patients with relapsed or refractory aggressive Non-Hodgkin Lymphoma treated with Anti-CD19 Chimeric Antigen Receptor T-cell therapy: A comparison of standard and mixture cure models. Medical Decision Making, 39(3): 294-298.

Barthold D, Basu A, 2020. "A scalpel instead of a sledgehammer: the potential of value-based deductible exemptions in high deductible health plans," Health Affairs Blog, June 18, 2020. DOI: 10.1377/hblog20200615.238552

Barthold D, Joyce G, Ferido P, Drabo EF, **Marcum ZA, Gray SL**, Zissimopoulos J. "Pharmaceutical treatment for Alzheimer's disease and related dementias: utilization and disparities," Journal of Alzheimer's Disease, forthcoming.

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