

Center for Community Health Integration



2022 Annual Report: *Service. Discovery. Learning.*

Inside...

- 01** From the Director
- 02** 2022 Highlights:
 - Research and Scholarship
 - Building Community
 - Innovation
 - Honors and Awards
- 08** Community Partner Spotlight:
 - Meet Chevon and Michael Matthews
- 10** Teaching, Mentoring, Learning
- 12** Research, Collaboration, and Support
- 16** Facts & Figures
- 17** Our Team
- 18** Appendix: 2022 Publications

From the Director

Dear Friends and Colleagues,

2022 was a year of *service, discovery,* and *learning* for the Center for Community Health Integration.

To serve the needs of our communities, in Northeast Ohio and beyond, we approached such seemingly intractable problems as fragmentation, depersonalization, and inequity. Using innovative methods and on-the-ground collaborations, our partnerships yielded new insights into the ways in which diverse elements interact to shape complex problems and the ways in which complex problems shape health. Together, with valued partners, we shared our learnings widely.

In a world of entities organized vertically around specific services and product lines, the CHI Center continues to serve as a force for horizontal integration, bringing together individuals, organizations,



CHI Center Director
Kurt Stange, MD, PhD

and initiatives to take on complex problems affecting health, healing, and equity.

We look forward to working with you to connect with the commonality that brings us all together for the collective good.

With gratitude,

Kurt

2022 Highlights

Research and Scholarship

The CHI Center's collaborative research, education, and improvement efforts focus on the ways in which complex systems shape the health of individuals, communities, and populations. In 2022, this research and scholarship included:

- **Learning From and About the Pandemic:**

- In two NIH-funded studies, the CHI Center is exploring how the COVID-19 pandemic is reshaping health care delivery and the quality and equity of care, with a focus on care for people with multiple chronic conditions ("Practice Innovations for Equity" (PIE) Study) and the effects of practice change on the primary care workforce and patient population as a whole" (Crisis Advancing Knowledge for Equity" (CAKE) Study).
- The CHI Center's Pamela Davis, in collaboration with Rong Xu, PhD, and medical student researchers, investigated the relationships between COVID-19 and Alzheimer's disease, substance use, dementia, and diabetes.
- CHI team members Prakash Ganesh, Johnie Rose, Heidi Gullett, Kurt Stange and colleagues published their study of a public school COVID-19 surveillance program. They found that, as classes and activities resumed, basic but consistent mitigation strategies were effective in maintaining a low transmission rate.
- Bethany Snyder's collaboration with Penn State College of Medicine produced insights into how the pandemic has shaped public health behavior compliance and the present and future of medical education.



- **Exploring the Wisdom of Practice:** The Center is leading the four-part Wisdom of Practice initiative, supported by the University Suburban Health Center Foundation, to bring to light the wisdom, caring, and healing that can happen when patients and doctors develop relationships in practice over time.



(Continued)

2022 Highlights

Research and Scholarship

- **Bridging a Cancer Informatics Gap:** The Ohio Cancer Assessment and Surveillance Engine (OH-CASE), developed by the CHI Center's Johnnie Rose and Siran Koroukian, is shedding light on the relationship between cancer burden and social need by linking demographic, disease, treatment, and outcomes data for every Ohioan diagnosed with cancer to data about their community. Dr. Rose has submitted a proposal to the National Cancer Institute to expand the database and develop software to enable other regions to create their own versions of OH-CASE.
- **Advancing Participatory System Science:** CHI Center faculty, staff, and community partners co-authored a paper describing the community-led Cross-Sector Innovation Initiative (CSII), which generated a shared picture of structural racism and change points in Cuyahoga County.

Using Community-Based System Dynamics to Address Structural Racism in Community Health Improvement

Heidi L. Gullett, MD, MPH; Gregory L. Brown, MS; Delores Collins, AAS, C-CHW; Martha Halko, MA; Robin S. Gotler, MA; Kurt C. Stange, MD, PhD; Peter S. Hovmand, PhD, MSW

ABSTRACT

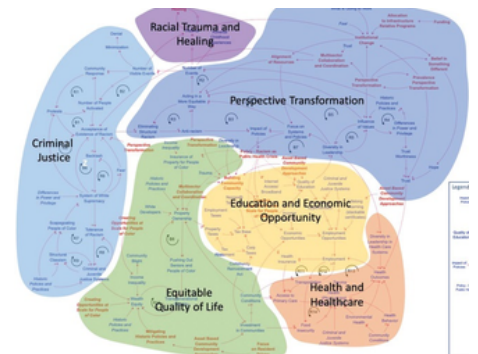
Context: Structural racism is a profound determinant of health resulting in pervasive health inequities for people of color. Despite the recognition of structural racism as a complex, dynamic system, we lack a shared vision of the system that would enable identification of solutions for equitable systems transformation.
Policy: Through a public health-led community health improvement planning process, a cross-sector consortium implemented community-based system dynamics to provide a systems science lens to guide efforts to eliminate structural racism.
Implementation: In group model building sessions involving diverse stakeholders, community-based system dynamics was used to bring together cross-sector stakeholders to create causal loop diagrams of the system of structural racism. Participants identified potential leverage points for actionable focus to eliminate structural racism.
Evaluation: Causal loop diagrams of structural racism generated through group model building demonstrate complex dynamics in the areas of criminal justice, education and economic opportunity, health and health care, quality of life, racial trauma and healing, and a promising system transformative solution through perspective transformation.
Discussion: Community-based system dynamics, employed in the context of local community health improvement planning, engages stakeholders in systems thinking through sharing lived experience to create system maps of structural racism and identify leverage points and transportable solutions that foster health equity. These informal maps serve as the foundation for formal computer simulation models that will guide systemic action on high-yield, community-driven solutions to eliminate structural racism.
- Associate Director Heidi Gullett and co-authors Mamta Singh and Patricia Thomas contributed a new chapter, "**Curricula That Address Community Needs and Health Equity**," to a new edition of the influential health professional education textbook, *Curriculum Development for Medical Education: A Six-Step Approach*.
- Peter Hovmand's work with the National Academies of Sciences, Engineering, and Medicine **Roundtable on Obesity Solutions**, which produced an obesity causal and solutions systems map and a narrative roadmap to guide the Roundtable's activities, was published in *Current Problems in Cardiology*.
- A MetroHealth Population Research Institute study (Ashwini Sehgal, PI, Kurt Stange, co-investigator) found that, when trained as manuscript reviewers, **community members provide new and helpful input to medical journals**. "Community members as reviewers of medical journal manuscripts: A randomized controlled trial," was published in the *Journal of General Internal Medicine*.

2022 Highlights

Building Community

Building relationships in support of communities, locally and around the world, is at the heart of the CHI Center's work. In 2022:

- The Center and community partners completed the Cross-Sector Innovation Initiative (CSII), which used community-based system dynamics to **identify systems underlying structural racism and points at which those systems can be changed**. The resulting maps and simulation models will guide action on community-driven solutions to eliminate structural racism.
- The Center's Peter Hovmand, Heidi Gullett, Robinson Salazar and Robin Gotler developed a **"Systems Thinking Toolkit"** to introduce systems concepts and tools for recognizing racism as a system.
- Associate Director Heidi Gullett supported community partners in developing Cuyahoga County's **Community Health Improvement Plan**. The plan brings together all local health care systems, health departments, and many community organizations to further health and equity by addressing local health priorities.
- CHI Center faculty member Anne Gaglioti continued work on health equity and community engagement with the Morehouse School of Medicine, including:
 - Establishing a primary care research network to leverage **community-engaged research to address health inequities** as part of the NIH "Network for Community Engaged Primary Care Research: Coalition to Advance COVID-19 Equity" (Gaglioti Co-PI).
 - "Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD):" **Bringing underrepresented researchers and communities into AI/ML development** (Gaglioti, Co-Investigator)
 - The Southeast Regional Clinicians Network, a **practice-based research network made up of Federally Qualified Health Centers** across eight southeastern states (Gaglioti, Co-Director)



CSII Working System Map of Structural Racism in Cuyahoga County



(Continued)

2022 Highlights

Building Community

- We continued our work with **Bridges out of Poverty**, a program to improve lives and build sustainable success by understanding the dynamics that underlie poverty. CHI Center staff James Bindas and Bethany Snyder, with Bridges collaborator Jennifer Hedinger, provided training workshops for the Trumbull County Board of Developmental Disabilities and Iron and String Life Enhancement.
- The Center's Community Based System Dynamics (CBSD) Lab was honored to host Paora Messiah Te Hurihanganui, Hemi Tai Tin, and Dr Ihirangi Heke, who bring Māori perspectives to their work on **indigenous health and its connection to the environment**. They worked with the CHI Center team on the use of systems science to support community healing. Their panel discussion, "Indigenous Knowledge, Environments and Wellbeing in Aotearoa (New Zealand)," was well-attended by members of the University and the Cleveland community.



2022 Highlights

Innovation

To achieve our mission – to shed light on the complex ways that diverse determinants interact to affect health – the CHI Center combines collaboration with out-of-the-box thinking about the methods and content of our work.

- The CHI Center, Larry A. Green Center, and University of Colorado began work on a new measure of care that integrates physical, behavioral, and social health. The project, funded by the Centers for Medicare and Medicaid Services Office of Burden Reduction, builds on the **innovative methods** used by the research team in developing the widely-used Person-Centered Primary Care Measure, including crowd-sourcing, expert input, and indepth analysis of what people say is important to their health and wellbeing.
- Items on the Person-Centered Primary Care Measure
v2.1

HOW WOULD YOU ASSESS YOUR PRIMARY CARE EXPERIENCE?

 - My practice makes it easy for me to get care.
 - My practice is able to provide most of my care.
 - In caring for me, my doctor considers all factors that affect my health.
 - My practice coordinates the care I get from multiple places.
 - My doctor or practice knows me as a person.
 - My doctor and I have been through a lot together.
 - My doctor or practice stands up for me.
 - The care I get takes into account knowledge of my family.
 - The care I get in this practice is informed by knowledge of my community.
 - Over time, my practice helps me to stay healthy.
 - Over time, my practice helps me to meet my goals.
- The CHI Center uses system dynamics to explore how complex systems affect the health of communities locally and around the world. In 2022:
 - Peter Hovmand led **group model building sessions** to:
 - Support the development and evaluation of the Nutrition Equity Fund of the Swetland Center for Environmental Health
 - Model food systems resiliency and sustainability in Alaska, Hawai'i, Guam, the Northern Mariana Islands, and American Samoa.
 - A **new Enhanced Primary Care Model**, developed by the CHI Center's John Pastor Ansah, was adopted by Singapore's Ministry of Health to evaluate the impact of a national policy on population health.
 - Research Associate Robinson Salazar developed **new system dynamics tools**, including a "molecule" describing the dynamics of access to fresh produce.
 - Johnie Rose collaborated with researchers at the Cleveland Clinic Respiratory Institute to develop a **new simulation framework** for alternative policies affecting organ transplantation.

2022 Highlights

Honors and Awards

- CHI Center faculty member Pamela Davis was honored as a Distinguished University Professor and with an endowed chair in her name.
- The first recipient of the Pamela B. Davis MD PhD Professor of Medicine Chair was the CHI Center's Peter Hovmand, whose highly collaborative work in community based system dynamics spans the Schools of Medicine, Engineering, and the Mandel School of Applied Social Sciences.
- Dr. Davis's collaboration with Rong Xu, PhD, and medical student researchers produced the [2nd "Most Talked About" paper](#) in JAMA



Peter Hovmand (seated) received the Pamela B. Davis Chair. With (left to right) Dean Stan Gerson, Pamela Davis, and CHI Center Director Kurt Stange

- Network Open* with almost 5,000 Twitter shares and more than 50,000 views.
- Prakash Ganesh, MD, MPH, CHI Center faculty member, was appointed Medical Director of the Cuyahoga County Board of Health and had a leadership role in the Ohio Hepatitis Academic Mentorship Program.
 - Core team member Heidi Gullett was elected by the American College of Preventive Medicine as one of thirteen 2022 Fellows.
 - The Case Western Reserve University/University Hospitals Cleveland Medical Center Preventive Medicine Residency program, led by Johnie Rose (Program Director) and Prakash Ganesh (Associate Program Director), received a commendation from the Accreditation Committee for Graduate Medical Education (ACGME) and was ranked the [third best program in the U.S.](#)

Community Partner Spotlight

Meet Chevon and Michael Matthews

When you spend time with Chevon and Michael Matthews, you quickly learn that two people can change the world.

Michael, a business consultant and non-profit director, and Chevon, a scientist and educator, decided at a young age that they were going to make a difference.

“Mike and I are both only children and products of single mothers,” Chevon explained, “so we know how much it takes and how a community can affect the trajectory that a child goes in.”

They met in college when Michael was launching a nonprofit devoted to developing Black youth. Chevon soon joined the effort. They married, graduated, and returned to Michael’s hometown of Cleveland, where Chevon taught science,



Michael Matthews coaching at the 2022 Community Cup Classic in Cleveland

while Michael continued his work with youth in the nonprofit sector. While maintaining their ties to Cleveland, they eventually moved to New Jersey, when Chevon began work as a forensic DNA analyst for the New York City Chief Medical Examiner's office. Michael established a consulting firm supporting the work of nonprofits and other businesses.

But a list of their careers doesn’t tell the full story. Michael and Chevon have incorporated a deep commitment to youth and families into their work and their lives. They have used their role as consultants for a Cleveland community health worker (CHW) organization, A Vision of Change, as a springboard to support CHWs in their efforts to

(Continued)



Chevon Matthews (back row, left) and colleagues provided health and wellness services at the 2022 Community Cup Classic.

Community Partner Spotlight



Participants and supporters of the first annual First Responder and Community Leader softball game, designed to build connections between first responders and the community, part of the 2022 Community Cup Classic founded by Michael and Chevon Matthews.

meet community members' needs and improve health and equity in Cleveland. They also founded their own nonprofit, the [Community Cup Classic Foundation](#), which partners with A Vision of Change and other organizations to offer programs that empower youth, engage families, and promote health and wellness.

In 2020, Chevon and Michael began sharing their experiences and insights as part of the CHI Center's Cross-Sector Innovation Initiative. The project, which completed its work in 2022, used community based system dynamics to identify the complex systems underlying structural racism in Cuyahoga County, resulting in a map (see page 4) of those systems and their interactions.

The map makes a difference, according to the Matthews, in part because it reflects the realities of those experiencing systemic racism.

"The way the model was put together you can see what community people have been saying for 50, 60, 70 years. These are things that are happening, but until now nobody could figure out a way to show it," Michael explained. Chevon agreed: **"That map is such a great tool because so many people in the community feel they don't get the respect for what they know. But now they have it in black and white, and it can't be ignored. It can't be denied."**

For all of the challenges that come with the hard work of strengthening individuals, families and communities, Michael and Chevon remain committed and optimistic. "There's always going to be someone in need," says Chevon. "But I think if we can help in enough pockets of the community, then that can spread into other areas. That's the hope."

Teaching, Mentoring, Learning

Engaging learners in generating new knowledge and integrating action is among the CHI Center's core values. In 2022, our faculty taught, mentored, researched, and presented, including the following.

- As directors of the Case Western Reserve University/University Hospitals Cleveland Medical Center Preventive Medicine Residency Program, Johnie Rose (Program Director) and Prakash Ganesh (Associate Program Director) developed leaders in public and population health.
- Dr. Rose directed the Clinical Translational Science PhD program, matriculating a record seven students into the program in 2022.
- Classes and student/resident lectures presented by Center faculty included:
 - "Systems Thinking for Equity" (Hovmand)
 - "System Dynamics of Social Equity" (Hovmand, Salazar)
 - "The Human Blueprint" (Davis)
 - "A Participatory Approach to Defining Social Problems" (Biroscak, for the CWRU President's Leadership Development Program)
 - "Integrated Thinking in Population and Quantitative Health Sciences" (Biroscak)
- CHI Center faculty and staff **guided and mentored** high schools students (as part of Cleveland's Say Yes! program), graduate students, medical students, and faculty.
- **Medical student researchers** played a key role in Pamela Davis's research collaboration with Rong Xu, PhD, of the Center for AI in Drug Discovery, with additional student guidance from Pauline Terebuh and Dina Greisl.
- The ongoing study, "**What are Medical Students Thinking About the Future of Health Care?**," part of the Wisdom of Practice Initiative, completed a second round of longitudinal interviews with CWRU medical students to better understand their views of the future of health care and how those views change over time.



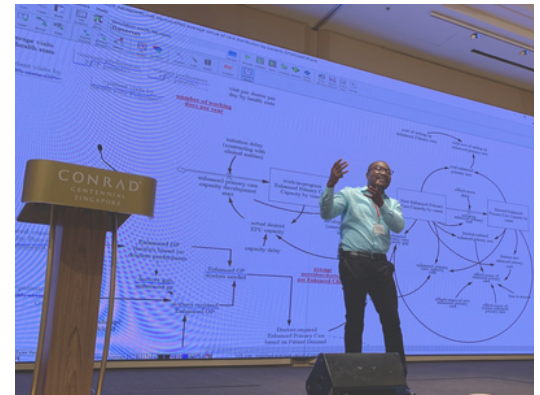
Johnie Rose, MD, PhD, Director of the CWRU Preventive Medicine Residency and Clinical Translational Science PhD Programs

(Continued)

Teaching, Mentoring, Learning

The CHI Center team and invited guests shared insights with local, national, and international audiences.

- John Pastor Ansah presented his **Enhanced Primary Care model** to action-oriented stakeholders in Singapore and at two international system dynamics conferences.
- Peter Hovmand was the keynote speaker, discussing **community based system dynamics modeling**, at Google X's Community Based Innovations Summit.
- Anne Gaglioti was an invited presenter on a National Academies of Sciences, Engineering, and Medicine panel, "Accelerating the Use of Findings from **Patient-Centered Outcomes Research** in Clinical Practice to Improve Health and Health Care."
- Johnie Rose gave invited national talks on "The **Ohio Cancer Assessment and Surveillance Engine**" and "A Multilevel **Informatics Solution** for Catchment Area Population Cancer Data."
- Pamela Davis gave **invited presentations** to the American Thoracic Society, NHLBI Medical Student Research Training program, Clinical Research Forum IT Roundtable, and the Alzheimer's Research & Prevention Foundation, among others.
- CHI Center Executive Director James Bindas gave invited presentations to CTSC KL2 scholars: "Considerations in the **Preparation of a Research Proposal Budget**—the Basics" and "**My Proposal was Awarded** – Now What?"
- The CHI Center hosted the first annual Wisdom of Practice lecture on "**Corporatization and the Future of Health Care**," by policy and research expert Lawrence Casalino, MD, PhD.



John Pastor Ansah presenting his Enhanced Primary Care Model in Singapore



Lawrence Casalino, MD, PhD, the inaugural Wisdom of Practice lecturer

Research, Collaboration, and Support

In 2022, the CHI Center generated actionable new knowledge through research and collaboration across disciplines and boundaries. Our projects are listed below. We extend our sincere thanks to the individuals and organizations (in *italics*) who supported our work and our vision.

Strengthening Community Health and Equity

"Health Improvement Partnership-Cuyahoga." *Supported by HealthComp Foundation and local public health and health care systems.*

"Supporting Communities in Achieving Equity and Better Health." *Supported by the Centers for Disease Control Racial and Ethnic Approaches to Community Health (REACH) program.*

"Building a Foundation for Equity Science in Community Health." *Supported by KL2 Award, Cleveland Clinical and Translational Science Collaborative.*

"Connect2CWRU." *Supported by Substance Abuse and Mental Health Services Administration.*

"Bridges Out of Poverty, Getting Ahead in a Just-Gettin' By World." *Supported by American Cancer Society, Nova Institute for Health, and Dr. Mirfee Ungier & Joshua D. Ungier*

"Multi-Level Interventions to Reduce Caries Disparities in Primary Care Settings" (CWRU School of Dental Medicine). *Supported by National Institute of Dental and Craniofacial Research.*

"Involving Communities in Delivering and Disseminating Health Disparity Interventions" (MetroHealth). *Supported by National Institute of Minority Health and Health Disparities.*

"Network for Community Engaged Primary Care Research: Coalition to Advance COVID-19 Equity" (Morehouse School of Medicine). *Supported by National Heart, Lung, and Blood Institute and National Institute of Minority Health and Health Disparities.*

"National Infrastructure for Mitigating the Impact of COVID-19 within Racial and Ethnic Minority Communities" (Morehouse School of Medicine). *Supported by Department of Health and Human Services Public Health Service.*

"Examining Health Information Technologies to Address Health Disparities" (Morehouse School of Medicine). *Supported by United Health Foundation*

Systems Approaches to Challenging Problems

"Cross-Sector Innovation Initiative." *Supported by Public Health National Center for Innovations, Robert Wood Johnson Foundation.*

"Public Simulation Model for Improved Health Outcomes (Planning Grant)." *Supported by Google X.*

(Continued)

Research, Collaboration, and Support

Systems Approaches to Challenging Problems (continued)

"Food System Resiliency for Children's Healthy Living" (University of Hawaii). Supported by U.S. Department of Agriculture–Agriculture Research Services.

"Nutrition Equity Fund" Group Model Building Workshops (Swetland Center for Environmental Health). A part of the *Nourishing Neighborhoods, Empowering Communities* study conducted by Case Western Reserve University in partnership with Neighborhood Connections and The FARE Project.

The Larry A. Green Center: Advancing Primary Health Care for the Public Good

"Novel, High-Impact Studies Evaluating Health System and Healthcare Professional Responsiveness to COVID-19." Supported by Agency for Healthcare Research and Quality.

"COVID-19 Longitudinal National Survey of Primary Care Patients and Clinicians." Supported by Agency for Healthcare Research and Quality, Morris–Singer Foundation, and Samueli Foundation.

"Novel Comprehensive Health Measure." Supported by Centers for Medicare & Medicaid Services.

"Distinguished Scholars Fellowship." Supported by American Board of Family Medicine Foundation.

Building Primary Health Care and Community-Based Practice

"Wisdom of Practice Initiative." Supported by University Suburban Health Center Foundation.

"Primary Care as Social Capital." Supported by Nova Institute for Health.

"Long-Term Effects of COVID-19 and Health Care Delivery Changes on Health Disparity Populations Living with Multiple Chronic Conditions." Supported by National Institute on Aging.

"Long-Term Effects of COVID-19-induced Health Care Delivery Changes on Patient & Workforce Processes & Outcomes in Safety Net Practices Caring for Health Disparity Populations." Supported by National Institute on Minority Health and Health Disparities.

"Improving Primary Health Care: Changing the Scope of Practice." Supported by Spencer Foundation.

Advancing Cancer Prevention and Control

"Northeast Ohio Cancer Assessment and Surveillance Engine" (Case Comprehensive Cancer Center). Supported by National Cancer Institute.

"Population Cancer Analytics Shared Resource" (Case Comprehensive Cancer Center). Supported by National Cancer Institute.

"Systems Thinking in Global Health (IPA)." Supported by National Cancer Institute Center for Global Health.

"Cognitive Impairment, Multimorbidity, and End-Of Life Care in Older Cancer Patients." Supported by National Cancer Institute.

(Continued)

Research, Collaboration, and Support

Improving Health and Health Care

"Predictive Intelligence for Pandemic Prevention Phase 1." *Supported by National Science Foundation.*

"Testing the Effectiveness of Individualized Disease Prevention for Middle-Aged Adults." *Supported by National Institute on Aging.*

"Medicare Annual Wellness Visit Practice Redesign Toolkit" (UCLA). *Supported by National Institute on Aging.*

"Achieving Outstanding Cardiovascular Health Outcomes for All Ohioans: A Statewide Cardiovascular Health Collaborative (Cardio-OH)." *Supported by Agency for Healthcare Research and Quality.*

"Forecasting Lung Transplant Benefit: A Dynamic Risk Modeling Approach" (Cleveland Clinic Respiratory Institute). *Supported by National Heart, Lung, and Blood Institute.*

"Cardiothoracic Surgical Trials Network." *Supported by National Heart, Lung, and Blood Institute.*

"Empowering Women and Providers for Improved Care of Urinary Incontinence." *Supported by Agency for Healthcare Research and Quality.*

"Collision of Alzheimer's Disease and COVID-19 Pandemic in the United States: Risks, Outcomes, Disparities and Treatments." *Supported by National Institutes of Health.*

"An Integrated Reverse Engineering Approach Toward Rapid Drug Repositioning for Alzheimer's Disease." *Supported by National Institute on Aging.*

"Combine Computational Prediction, Network Analysis and Genetic Screening in C Elegans to Uncover Neurodegenerative Causes in Alzheimer's Disease." *Supported by National Institute on Aging.*

"Characterizing Multifaceted Interactions Between COVID-19 and Alcohol Use Disorder Based on Real-time Analysis of Electronic Health Records of 62 million Adult Patients." *Supported by National Institute on Alcohol Abuse and Alcoholism.*

"Drug Repurposing for Cocaine Use Disorder Using a Combined Strategy of Artificial Intelligence-based Prediction and Retrospective Clinical Corroboration." *Supported by National Institute on Drug Abuse.*

"Rural Communities Opioid Response Program Implementation" (Morehouse School of Medicine). *Supported by Health Resources and Services Administration.*

"Improving Equity in Smoking Cessation for Low-income Adults" (Oregon Health Sciences University). *Supported by American Cancer Society.*

(Continued)

Research, Collaboration, and Support

Exploring Equity and Innovation in Education and Research

"Cleveland Clinical & Translational Science Collaborative – Community & Collaboration Shared Resource." *Supported by National Center for Advancing Translational Sciences.*

"Research Development and Mentoring Service Agreement." *Supported by OCHIN, Inc, a not-for-profit health information and innovation network.*

"Institutional Career Development Core." *Supported by National Center for Advancing Translational Sciences.*

"National Research Service Award – Training Core." *Supported by National Center for Advancing Translational Sciences.*

"Empowering People with Intellectual and Developmental Disabilities to Engage as Partners in Research" (Morehouse School of Medicine). *Supported by Patient-Centered Outcomes Research Institute.*

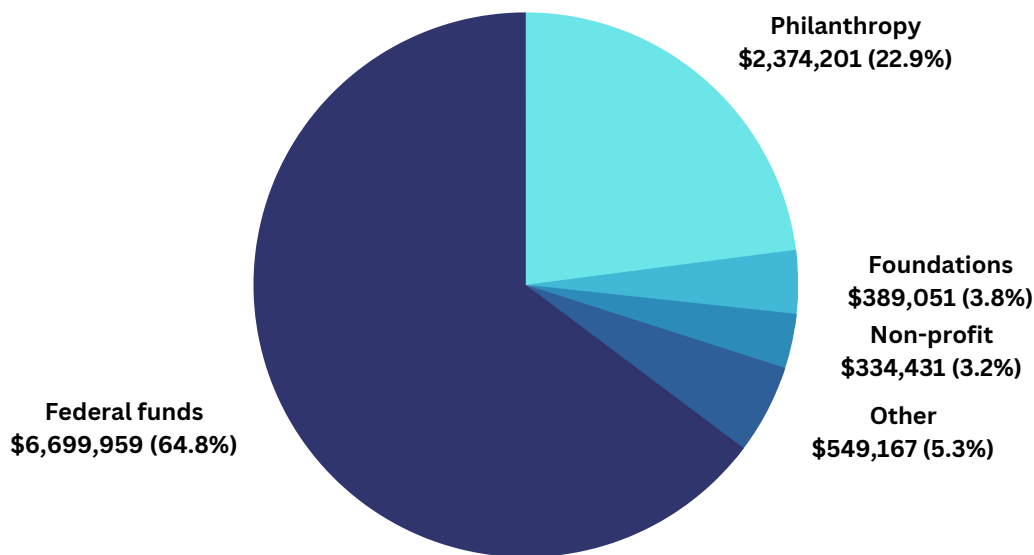
"AIM-AHEAD (Artificial Intelligence/Machine Learning) Consortium to Advance Health Equity and Researcher Diversity" (Morehouse School of Medicine). *Supported by Patient-Centered Outcomes Research Institute.*

Facts & Figures

Supporting the Vision

The Center's work would not be possible without the support of [dedicated individuals and organizations](#). Our sincere gratitude for their vision and support.

2022 Research Funding



2022 Funding Facts

- 2022 funding increased 16% over 2021.
- The CHI Center led 14 projects, half of which were funded by the National Institutes of Health.
- We took part in 27 projects led by collaborators, 2/3 of which were federally funded.

Our Team

The work of the CHI Center would not be possible without the wisdom and support of our extended team of community partners, colleagues, funders, and faculty. Thank you!

CHI Center Faculty

Terry Allan, MPH	Lauren Kreiger, MD, MPH
Nazleen Bharmal, MD, PhD	Li Li, MD, PhD
Gregory Brown, MS	David Margolius, MD
Daniela Calvetti, PhD	Jacqueline Matloub, MBBS
Mark Chupp, PhD	William Miller, MD
Claudia J. Coulton, PhD	James Misak, MD
Colin Drummond, PhD, MBA	Anita Mlsra-Hebert, MD, MPH
Rebecca Etz, PhD	Lisa Navracruz, MD
Robert L. Fischer, PhD	R. Henry Olaisen, MPH, PhD
Susan A. Flocke, PhD	Goutham Rao, MD
Darcy Freedman, PhD, MPH	Sarah Ronis, MD
Ronald Fry, PhD	Nicholas Schiltz, PhD
Anne Gaglioti, MD	Mamta Singh, MD, MS
Prakash Ganesh, MD	Erkki Somersalo, PhD
Charles Garven, MD, MPH	James Werner, PhD, MSSA
Larry Green, MD	Stephen J. Zyzanski, PhD
Siran M. Kiroukian, PhD	

Core Team

Kurt Stange, MD, PhD, Director	Johnie Rose, MD, PhD
Heidi Gullett, MD, MPH, Associate Director	Elizabeth Albert, PhD, MPH
James Bindas, MBA, Executive Director	Robin Gotler, MA
John Pastor Ansah, PhD	Dina Greisl
Brian Biroscak, PhD, MS, MA	Robinson Salazar Rua, PhD
Pamela B. Davis, MD, PhD	Bethany Snyder, MPH
Peter S. Hovmand, PhD, MSW	

Appendix: Publications

In 2022, the CHI Center's collaborative work generated more than 60 publications essential to the health and equity of individuals and communities. (**Bold** = CHI Center core team members. *Italics* = adjunct and secondary faculty.)

Strengthening Community Health, Public Health, and Equity

Factors affecting timely breast cancer treatment among black women in a high-risk urban community: a qualitative study. *BMC Womens Health*. 2022 Aug 21;22(1):354. **Johnie Rose**, Yvonne Oliver, Paulette Sage, Weichuan Dong, *Siran M Koroukian*, Sarah Koopman Gonzalez.

Before and during pandemic telemedicine use: An analysis of rural and urban safety-net clinics. *Am J Prev Med*. 2022 Dec; 63(6): 1031–1036. Annie E. Larson, Whitney E. Zahnd, Melinda M. Davis, **Kurt C. Stange**, et al.

Medicaid expansion associated with reduction in geospatial breast cancer stage at diagnosis disparities. *J Public Health Manag Pract*. 2022 Sep–Oct 01;28(5):469–477. Weichuan Dong, **Johnie Rose**, Uriel Kim, Gregory S Cooper, Jennifer Tsui, *Siran M Koroukian*.

ICD-10 Z-code health-related social needs and increased healthcare utilization. *Am J Prev Med*. 2022 Apr;62(4):e232–e241. Wyatt P. Bensken, Philip M. Alberti, **Kurt C. Stange**, Martha Sajatovic, *Siran M. Koroukian*.

Measuring state-level racial inequity in severe maternal morbidity in the Medicaid population. *Matern Child Health J*. 2022 Apr;26(4):682–690. Tyler Barreto, Chaohua Li, Yoon-Kyung Chung, Yalda Jabbarpour, Peter Baltrus, *Anne Gaglioti*.

Combinations of chronic conditions, functional limitations and geriatric syndromes associated with periodontal disease. *Fam Med Community Health*. 2022 Aug;10(3):e001733. Hussam M Alqahtani, *Siran M Koroukian*, **Kurt Stange**, Nabil F Bissada, *Nicholas K Schiltz*.

Access and utilization of asthma medications among patients who receive care in Federally Qualified Health Centers. *J Prim Care Community Health*. 2022 Jan–Dec;13:21501319221101202. Asma M. Ali, *Anne H. Gaglioti*, Rebecca H. Stone, et al.

Individual and neighborhood influences on the relationship between waist circumference and coronary heart disease in the Reasons for Geographic and Racial Differences in Stroke Study. *Prev Chronic Dis*. 2022 Apr 21;19:E20. *Anne H Gaglioti*, Desiree Rivers, Joanna Bryan Ringel, Suzanne Judd, Monika M Safford.

'Us-versus-them': Othering in COVID-19 public health behavior compliance. *PLoS One*. 2022 Jan 24;17(1):e0261726. Lauren Jodi Van Scoy, **Bethany Snyder**, Erin L Miller, Olubukola Toyobo.

Publications

Strengthening Community Health, Public Health, and Equity (continued)

A framework for health equity in people living with epilepsy. *Epilepsy Res.* 2022 Dec;188:107038. Wyatt P Bensken, Philip M Alberti, Omar I Khan, Scott M Williams, **Kurt C Stange**, Guadalupe Fernandez-Baca Vaca, Barbara C Jobst, Martha Sajatovic, *Siran M Koroukian*.

Inconsistent Medicaid coverage is associated with negative health events for people with epilepsy. *J Health Care Poor Underserved.* 2022;33(2):1036-1053. Wyatt P Bensken, Timothy H Ciesielski, Scott M Williams, **Kurt C Stange**, Martha Sajatovic, *Siran M Koroukian*.

Mixed-methods analysis of adults likely versus unlikely to get a COVID-19 vaccination. *Am J Health Behav.* 2022 Sep 1;46(4):467-476. Lauren J Van Scoy, Heather Costigan, Rachel A Smith, **Bethany Snyder**, et al.

"I got a little addiction": Adolescent and young adult cigarillo users' self-perceptions of addiction. *Drug Alcohol Depend.* 2022 Feb 1;231:109235. Sarah J Koopman Gonzalez, Erika S Trapl, **Elizabeth L Albert**, Karen J Ishler, David N Cavallo, Rock Lim, *Susan A Flocke*.

Is Medicaid expansion narrowing gaps in surgical disparities for low-income breast cancer patients? (ASO Visual Abstract.) *Ann Surg Oncol.* 2022 Mar;29(3):1763-1769. Samilia Obeng-Gyasi, **Johnie Rose**, Weichuan Dong, Uriel Kim, *Siran Koroukian*.

Spatial heterogeneity and rural-urban differences in the Black-White breast cancer mortality disparity in Georgia (Abstract PO-173). *Cancer Epidemiol Biomarkers Prev* (2022) 31 (1_Supplement): PO-173. Rebecca J. Nash, Lauren E. McCullough...*Anne H. Gaglioti*, et al.

Neighborhood-level redlining-associated methylation in breast tumors: The impact of structural racism on the tumor epigenome (Abstract PR-03). *Cancer Epidemiol Biomarkers Prev* (2022) 31 (1_Supplement): PR-03. Jasmine M Miller-Kleinhenz, Leah Moubadder, Kirsten M. Beyer, Yuhong Zhou, *Anne H. Gaglioti*, Jazib Gohar, Lindsay J. Collin, et al.

Systems Approaches to Challenging Problems

Using community-based system dynamics to address structural racism in community health Improvement. *J Public Health Manag Pract.* 2022 Jul-Aug 01;28(4 Suppl 4):S130-S137. **Heidi L Gullett**, *Gregory L Brown*, Delores Collins, Martha Halko, **Robin S Gotler**, **Kurt C Stange**, **Peter S Hovmand**.

System dynamics modelling to engage community stakeholders in addressing water and sugar sweetened beverage consumption. *Int J Behav Nutr Phys Act.* 2022 Sep 10;19(1):118. Andrew D Brown, Kristy Bolton, Brydie Clarke, Penny Fraser, Janette Lowe...**Peter S Hovmand**, et al.

Meeting housing needs of child welfare-involved families: Policy insights from simulation modeling. *Child Abuse Negl.* 2022 Oct;132:105809. Patrick J. Fowler, Katherine E. Marcal, **Peter S. Hovmand**.

Publications

Systems Approaches to Challenging Problems (continued)

An agile systems modeling framework for bed resource planning during COVID-19 pandemic in Singapore. *Front Public Health*. 2022 May 18;10:714092. Sean Shao Wei Lam, Ahmad Reza Pourghaderi, Hairil Rizal Abdullah, Francis Ngoc Hoang Long Nguyen...**John Pastor Ansah**, et al.

System dynamics of cognitive vulnerabilities and family support among Latina children and adolescents. *Clin Child Fam Psychol Rev*. 2022 Mar;25(1):131-149. **Peter S Hovmand**, Esther J Calzada, Lauren E Gulbas, Su Yeong Kim, Saras Chung, et al.

Using systems science for strategic planning of obesity prevention and treatment: The Roundtable on Obesity Solutions experience. *Curr Probl Cardiol*. 2022 May 2;101240. Nicolaas P Pronk, Ihuoma Eneli, Christina D Economos...**Peter S Hovmand**, Members of the Roundtable on Obesity Solutions.

Implementing group model building with the Shape Up Under 5 Community Committee working to prevent early childhood obesity in Somerville, Massachusetts. *J Public Health Manag Pract*. 2022 Jan-Feb 01;28(1):E43-E55. Larissa Calancie, Karen Fullerton, Julia M Appel, Ariella R Korn, Erin Hennessy, **Peter Hovmand**, Christina D Economos.

Optimizing national border reopening policies in the COVID-19 pandemic: A modeling study. *Front Public Health*. 2022 Nov 30;10:979156. Jiaoling Huang, Ying Qian, Wuzhi Shen...**John Pastor Ansah**, Fan Wu.

Advancing Primary Health Care for the Public Good

Primary care: A critical stopgap of mental health services during the COVID-19 pandemic. *J Am Board Fam Med*. 2022 Oct 18;35(5):891-896. Jacqueline B Britz, Alison N Huffstetler, Tracey L Henry, Braveen Ragunathan, Erin Britton, Neeti Dosh, **Kurt C Stange**, *Rebecca S Etz*.

Integrating behavioral health & primary care for multiple chronic diseases: Clinical trial of a practice redesign toolkit. *Ann Fam Med*. 2022 Apr 1;(20 Suppl 1). Benjamin Littenberg, Paula Reynolds, Lisa Natkin...**Kurt Stange**, et al.

Screening families in primary care for social and economic needs: Patients' urgency and activation for social care navigation. *Am J Prev Med*. 2022 Sep;63(3 Suppl 2):S122-S130. Sarah D. Ronis, Marie Masotya, Genevieve M Birkby, **Kurt C. Stange**.

Small solutions for primary care are part of a larger problem. *Ann Intern Med*. 2022 Aug;175(8):1179-1180. Derjung Mimi Tarn, Neil S. Wenger, **Kurt C. Stange**.

The craft of generalism clinical skills and attitudes for whole person care. *J Eval Clin Pract*. 2022 Dec;28(6):1187-1194. Johanna M Lynch, Mieke van Driel, Pamela Meredith, **Kurt C Stange**, et al.

Developing integration among stakeholders in the primary care networks of Singapore: a qualitative study. *BMC Health Serv Res*. 2022 Jun 15;22(1):782. Shilpa Surendran, Chuan De Foo, David Bruce Matchar, **John Pastor Ansah**, et al.

Publications

Advancing Cancer Prevention and Control

An informatics infrastructure to catalyze cancer control research and practice. *Cancer Causes Control*. 2022 Jun;33(6):899–911. **Johnie Rose**, Weichuan Dong, Uriel Kim...**Siran M. Koroukian**.

Post-Affordable Care Act improvements in cancer stage among Ohio Medicaid beneficiaries resulted from an increase in stable coverage. *Med Care*. 2022 Nov 1;60(11):821–830. **Siran M Koroukian**, Weichuan Dong, Jeffrey M Albert, Uriel Kim, Kirsten Y Eom, **Johnie Rose**, et al.

Variation in and factors associated with US county-level cancer mortality, 2008–2019. *JAMA Netw Open*. 2022 Sep 1;5(9):e2230925. Weichuan Dong, Wyatt P Bensken, Uriel Kim, **Johnie Rose**, Qinjin Fan, *Nicholas K Schiltz*, Nathan A Berger, **Siran M Koroukian**.

Excess cancer prevalence in men with HIV: A nationwide analysis of Medicaid data. *Cancer*. 2022 May 15;128(10):1987–1995. **Siran M. Koroukian**, Guangjin Zhou, Suparna M. Navale, *Nicholas K. Schiltz*, Uriel Kim, **Johnie Rose**, et al.

Phenotype discovery and geographic disparities of late-stage breast cancer diagnosis across U.S. counties: A machine learning approach. *Cancer Epidemiol Biomarkers Prev*. 2022 Jan;31(1):66–76. Weichuan Dong, Wyatt P. Bensken, Uriel Kim, **Johnie Rose**, Nathan A. Berger, **Siran M. Koroukian**.

Sociodemographic and clinical factors associated with receipt of biomarker testing in patients with metastatic colorectal cancer. *Cancer Med*. 2023 Jan;12(2):1850–1859. Sarah C. Markt, Benjamin D. Booker, Wyatt Bensken, *Nicholas K. Schiltz*, Fredrick R. Schumacher, **Johnie Rose**, Greg Cooper, Eva Selfridge, **Siran M. Koroukian**.

Impact of Medicaid expansion on breast cancer stage at diagnosis: Exploring the mechanisms at play (Abstract P3-12-30). *Cancer Res*. 2022;82(4_Supplement): P3-12-30. **Siran M. Koroukian**, Weichuan Dong, Jeffrey Albert, Uriel Kim, **Johnie Rose**, Cynthia Owusu, et al.

Understanding and Improving Health and Health Care

Back to the basics: A COVID-19 surveillance program within a local school district. *J Sch Health*. 2022 May;92(5):469–473. *Prakash R. Ganesh*, Ross May, Mitch Dandurand, Jeffrey Graham, **Johnie Rose**, **Heidi Gullett**, Dave Covell, **Kurt C. Stange**.

Cardiovascular disease preventive services among smaller primary care practices. *Am J Prev Med*. 2022 May;62(5):e285–e295. Miguel Marino, Leif Solberg...**Kurt C. Stange**, et al.

Incidence rates and clinical outcomes of SARS-CoV-2 infection with the Omicron and Delta variants in children younger than 5 years in the US. *JAMA Pediatr*. 2022 Aug 1;176(8):811–813. Lindsey Wang, Nathan A. Berger, David C. Kaelber, **Pamela B. Davis**, Nora D. Volkow, Rong Xu.

Association of COVID-19 with new-onset Alzheimer's Disease. *J Alzheimers Dis*. 2022;89(2): 411–414. Lindsey Wang, **Pamela B Davis**, Nora D Volkow, Nathan A Berger...Rong Xu.

Publications

Understanding and Improving Health and Health Care (continued)

Comparison of mRNA-1273 and BNT162b2 vaccines on breakthrough SARS-CoV-2 infections, hospitalizations, and death during the Delta-predominant period. *JAMA*. 2022 Feb 15;327(7):678-680. Lindsey Wang, **Pamela B. Davis**, David C. Kaelber, Nora D. Volkow, Rong Xu.

Association of COVID-19 with endocarditis in patients with cocaine or opioid use disorders in the US. *Mol Psychiatry*. 2023 Feb;28(2):543-552. Lindsey Wang, Nora D Volkow, Nathan A Berger, **Pamela B Davis**, David C Kaelber, Rong Xu.

COVID-19 breakthrough infections and hospitalizations among vaccinated patients with dementia in the United States between December 2020 and August 2021. *Alzheimers Dement*. 2023 Feb;19(2):421-432. Lindsey Wang, **Pamela B. Davis**, David C. Kaelber, Rong Xu

Association of SARS-CoV-2 infection with new-onset type 1 diabetes among pediatric patients from 2020 to 2021. *JAMA Netw Open*. 2022 Sep 1;5(9):e2233014. Ellen K Kendall, Veronica R Olaker, David C Kaelber, Rong Xu, **Pamela B Davis**.

Impact of the COVID-19 pandemic on a tertiary care public hospital in Singapore: resources and economic costs. *J Hosp Infect*. 2022 Mar;121:1-8. Y Cai, S Kwek, S S L Tang, S E Saffari, E Lum, S Yoon, **John Ansah**, D B Matchar, et al.

Developing a toolkit for implementing evidence-based guidelines to manage hypertension and diabetes in Cambodia: a descriptive case study. *Health Res Policy Syst*. 2022 Nov 29;20(Suppl 1):109. Nirmali Sivapragasam, David B Matchar, Pheak Chhoun, **John Ansah**, Siyan Yi

How should clinicians ally with patients whose health is unlikely to be improved by even numerous clinical encounters? *AMA J Ethics*. 2022 Dec 1;24(12):E1112-1120. Adam T Perzynski, **Kurt C Stange**.

Using mHealth to improve adherence and reduce blood pressure in individuals with hypertension and bipolar disorder (iTAB-CV): study protocol for a 2-stage randomized clinical trial. *Trials*. 2022 Jun 29;23(1):539. Jennifer B. Levin, David J. Moore, Colin Depp, Jessica L. Montoya, Farren Briggs, Mahboob Rahman, **Kurt C. Stange**, et al.

Toward a broader understanding of cystic fibrosis epidemiology and its impact on clinical manifestations. *Clin Chest Med*. 2022 Dec;43(4):579-590. Kimberly A. McBennett, **Pamela B Davis**.

Comorbidity-driven multi-modal subtype analysis in mild cognitive impairment of Alzheimer's disease. *Alzheimers Dement*. 2022 Sep 27. Sreevani Katabathula, **Pamela B Davis**, Rong Xu.

Identifying factors associated with periodontal disease using machine learning. *J Int Soc Prev Community Dent*. 2022 Dec 30;12(6):612-622. Hussam M Alqahtani, *Siran M Koroukian*, **Kurt Stange**, *Nicholas K Schiltz*, Nabil F Bissada.

Publications

Understanding and Improving Health and Health Care (continued)

Cardiovascular risk of gabapentin and pregabalin in patients with diabetic neuropathy. *Cardiovasc Diabetol*. 2022 Sep 1;21(1):170. Yiheng Pan, **Pamela B Davis**, David C Kaebler, Robert P Blankfield, Rong Xu.

The effect of different SARS-CoV-2 variants: Reply. *Alzheimers Dement*. 2023 Jan;19(1):370. Rong Xu, **Pamela B Davis**.

Reply to "Post-COVID 19 neurological syndrome: A new risk factor that modifies the prognosis of patients with dementia". *Alzheimers Dement*. 2022 Mar;18(3):544. **Pamela B. Davis**, Q. Wang, Rong Xu.

Provider perspectives of transitions of care at a tertiary care children's hospital with a hospitalist-run discharge clinic. *Clin Pediatr (Phila)*. 2023 Feb 1:99228221149279. Abigail Nelson, Heather Stuckey, **Bethany Snyder**, Lauren J Van Scoy, Carrie Daymont, et al.

Factors driving resistance to clinical decision support: Finding inspiration in Radiology 3.0. *J Am Coll Radiol*. 2022 Feb;19(2 Pt B):366–376. Michael A Bruno, Joseph S Fotos, Marika Pitot... **Bethany L Snyder**, et al.

Medical Education and Training

Chapter 11: Curricula that address community needs and health equity. **Heidi Gullett**, *Mamta Singh*, Patricia Thomas. In: Thomas PA, Kern DE, Hughes MT, Tackett SA, Chen BY, eds. *Curriculum Development for Medical Education: A Six-Step Approach*. 4th ed. Johns Hopkins University Press; 2022:271–311.

Early medical students' experiences as system navigators: Results of a qualitative study. *J Gen Intern Med*. 2022 Apr;37(5):1155–1160. Kelli Qua, **Heidi Gullett**, Amy Wilson-Delfosse, Patricia Thomas, *Mamta Singh*.

Transformative learning of medical trainees during the COVID-19 pandemic: A mixed methods study. *PLoS One*. 2022 Sep 16;17(9):e0274683. Benjamin Vipler, **Bethany Snyder**, Jennifer McCall-Hosenfeld, Paul Haidet, et al.

Preparing for the future of medical education: A case series of traditional and virtual clinical rotations in addiction medicine spanning the COVID pandemic. *Subst Abuse*. 2022;43(1):884–891. Curtis Bone, Nils Wendel, Shou Ling Leong, **Bethany Snyder**, et al.

Strengthening Research and Methods

Describing and assessing a new method of approximating categorical individual-level income using community-level income from the census (weighting by income probabilities). *Health Serv Res*. 2022 Dec;57(6):1348–1360. Uriel Kim, *Siran M Koroukian*, **Kurt C Stange**, James C Spilbury, Weichuan Dong, **Johnie Rose**.

Publications

Strengthening Research and Methods (continued)

Documenting the modeling process with a standardized data structure described and implemented in DynamicVu. *System Dynamics Review*. 2022. 38:264–291. Warren W Farr, Samuel D. Allen, Andrada Tomoaia-Cotisel, **Peter S Hovmand**.

Pandemic-related barriers to the success of women in research: A framework for action. *Nat Med*. 2022 Mar;28(3):436–438. **Pamela B. Davis**, Emma A. Meagher, Claire Pomeroy, William L. Lowe Jr, Arthur H. Rubenstein, et al.

Community members as reviewers of medical journal manuscripts: A randomized controlled trial. *J Gen Intern Med*. 2022 Sep 26. Anne M Huml, Jeffrey M Albert, Joshua M Beltran...Erika N Hood, Lisa C Nelson, Adam T Perzynski, **Kurt C Stange**, Ashwini R Sehgal

Measuring nicotine dependence among adolescent and young adult cigarillo users. *Nicotine Tob Res*. 2022 Oct 26;24(11):1789–1797. *Susan A Flocke*, Karen Ishler, **Elizabeth Albert**, et al.

Creation of a longitudinal legal data set to support legal epidemiology studies of mental health insurance legislation. *Psychiatr Serv*. 2022 Mar 1;73(3):265–270. Megan D. Douglas, Samantha Bent Weber, Claire Bass, Chaohua Li, *Anne H. Gaglioti*, et al.