

Hutchinson Institute for
Cancer Outcomes Research

2023 Annual Report



Fred Hutch
Cancer Center

Land Acknowledgment

Fred Hutchinson Cancer Center acknowledges the Coast Salish peoples of this land, the land which touches the shared waters of all tribes and bands within the Duwamish, Puyallup, Suquamish, Tulalip and Muckleshoot nations.

HICOR Research Portfolio



Financial Burden of Cancer

Understanding the causes and finding ways to prevent patients and caregivers from experiencing financial hardship from a cancer diagnosis.



Cost Effectiveness

Evaluating and comparing the costs and health outcomes of one or more interventions to inform clinical practice and policy.



Cancer Screening

Developing methods to improve cancer screening rates and testing interventions to remove barriers in underserved populations.



Health Disparities

Identifying and addressing preventable differences in the burden of disease or opportunities to achieve optimal health between population groups.



Cancer Care Delivery

Researching how the delivery of care impacts the health outcomes and well-being of patients and survivors.



Simulation Modeling

Developing computer models to estimate the population-level effects of a new health policy or guideline — such as changing the recommended age for cancer screening or introducing a new cancer treatment.

From the Directors



Scott Ramsey, MD, PhD
Director

HICOR continued to expand our research and community engagement programs in 2023. Our growing scientific team is fully committed to reducing health disparities, improving care quality for all patients, and increasing access to appropriate prevention and screening programs within and beyond Washington state.

In November, we were pleased to host the 8th Value in Cancer Care Summit, attended by patients, payers, providers, researchers, and policymakers. The Summit showcased a powerful video series in which patients and providers shared perspectives on experiences of racism in cancer care and communicated the urgency with which it must be dismantled. This project — a call to action for the cancer care community — was led by Bridgette Hempstead, Founder of Cierra Sisters cancer advocacy organization.



Veena Shankaran, MD, MS
Co-Director

Last year also brought the establishment of a Radiation Oncology Division at Fred Hutch Cancer Center, and we are delighted that Erin Gillespie, MD, MPH, has joined the new division and embedded her research program within HICOR. Dr. Gillespie's research and commitment to increasing access to high quality care are a valuable and welcome addition to the HICOR and Fred Hutch community.

Finally, we want to express our deepest gratitude to the patients who have participated in and advised on our research studies last year and throughout HICOR's history. Improving the care experience for patients and their loved ones underlies all our work. We could not do it without the patients who generously contribute their time and expertise to help us achieve this worthy goal.

A handwritten signature in black ink, appearing to read 'S Ramsey'.

Scott Ramsey, MD, PhD

A handwritten signature in black ink, appearing to read 'V Shankaran'.

Veena Shankaran, MD, MS

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Partners in Research: The HICOR Data Team

HICOR’s data repository is an engine that powers our science. The repository — which links cancer registry, healthcare claims, and financial records — serves as a foundation for research study development and community-engaged quality and cost reporting.

“We are fortunate to have a talented and dedicated team of data experts. Their work and partnership make it all possible.”

— Dr. Veena Shankaran,
HICOR Co-Director

To keep this engine running smoothly we rely on a dedicated team of data managers, coordinators, statistical programmers, compliance experts, and research associates. Data team members field requests from researchers across the

Cancer Consortium, help investigators refine research questions and protocols, conduct statistical analyses and co-author publications. These team members bring best-in-class technical capabilities and are essential to building and growing HICOR’s research portfolio.



HICOR’s data contains a unique set of linked records for **466,865** people with cancer that allows researchers to study how factors such as insurance status and health-related social needs impact cancer outcomes and care delivery.



“HICOR is a collaborative and rewarding workplace. We get to use our specific data expertise — whether in statistics, modeling, data structures, or visualizations — to meaningfully contribute to research.”

— Catherine Fedorenko,
Senior Data Analytics Manager

Back: Shannon Kestner, Project Coordinator; Winona Wright, Data Operations Manager; Angie Madrid, Statistical Programmer; Kaiyue Yu, Statistical Research Associate. **Front:** Lily Li, Statistical Programmer; Catherine Fedorenko, Senior Data Analytics Manager; Qin Sun, Statistical Programmer. **Not pictured:** Christopher Maerzluft, Statistical Programmer. *Photo by Robert Hood.*



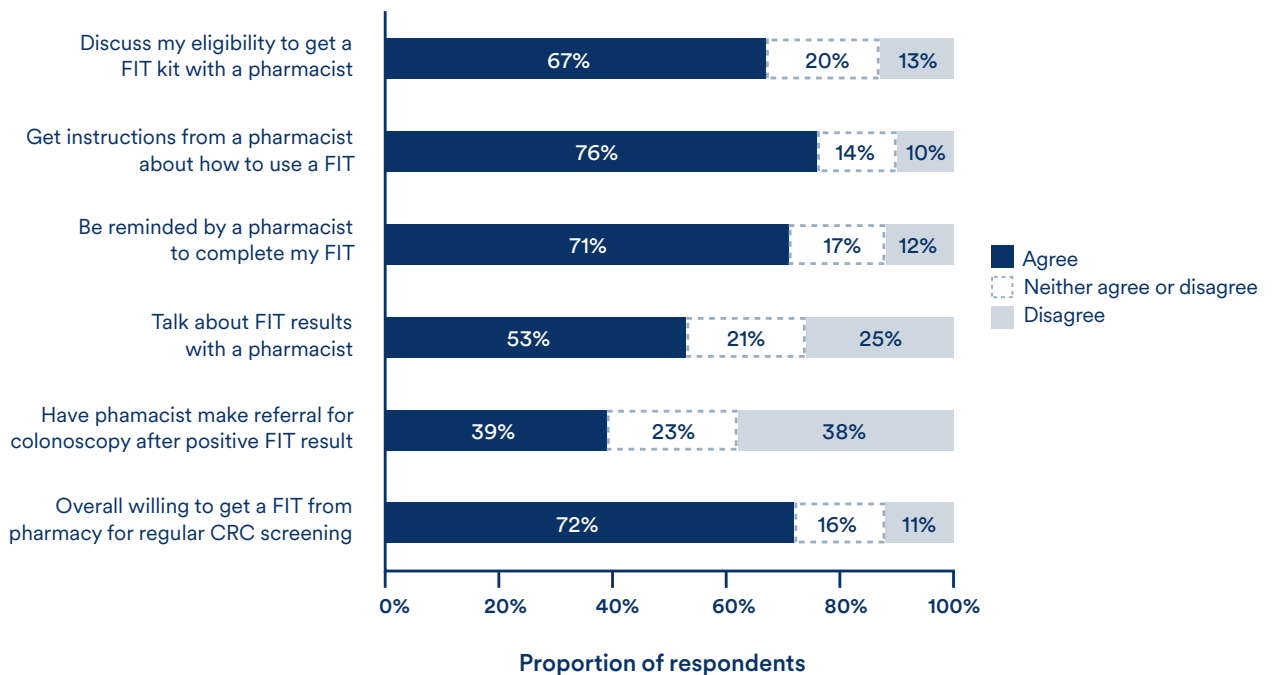
“Following the COVID pandemic, pharmacies are poised to play a larger role in preventive health and have the potential to increase CRC screening rates in underserved communities. Studies have shown that FIT outreach improves access to screening tests, particularly for rural and low-income residents.”

— Dr. Parth Shah, Principal Investigator

with longer travel times to their primary care provider were more willing. The acceptability of pharmacy-based CRC screening was supported by patient interviews conducted in Washington state and North Carolina to better understand people’s thoughts about the program. The interviews revealed that patients

found pharmacy-based screening highly acceptable due to convenience, accessibility and cost. However, concerns were raised about privacy and ensuring good coordination with their primary care provider, especially for patients with abnormal FIT results.

Willingness to participate in each step of PharmFIT (survey of 1,045 adults)





Black Voices: Anti-Racism in Oncology

HICOR partnered with the **Cierra Sisters**, a Seattle-based patient advocacy group, to produce a series of short videos to acknowledge and address the racism many women of color experience while dealing with breast cancer. The “Anti-Racism in Oncology” series is the product of this important collaboration.

The project, funded by the Center for Healthcare Strategies, shared perspectives from patients and providers about experiences of racism and ideas to ensure equitable, respectful, high-quality cancer care for Black and underserved patients.

“I want providers to know underneath our Black skin, we are human beings. I would like them to pause, set aside their preconceived stereotypes, and see their Black patient as a person and listen to them.”

— Bridgette Hempstead,
Cierra Sisters Founder and President



Previous page: Bridgette Hempstead speaks during the Anti-Racism in Oncology video project premiere celebration at the Fred Hutch Cancer Center campus. Photo by Robert Hood.

The videos contain stories of real people and provide a starting point for conversations about racism in health care. Patients shared stories of delays in care, late-stage diagnoses, incorrect assumptions about income and insurance type, difficulty accessing pain medication and poor communication. Providers and patients highlighted the need for trusting relationships where patients can share their concerns and providers listen and address them.

Bridgette Hempstead, Cierra Sisters founder and leader of this project, is focused on trying to reach Black patients, their caregivers, providers, policy makers and clinical staff, all of whom are needed to develop solutions to racism in cancer care. Her vision is for these videos to promote a no-tolerance policy for racism in healthcare institutions across the country.



“One of the tangible things that providers can do today is to help build those trusting relationships with their patients by seeing them as whole person, listening and getting to know them.”

— Dr. Vida Henderson,
Public Health Researcher

Anti-Racism in Oncology Video Series

To watch the video series on YouTube, scan the QR code or visit bit.ly/anti-racism-oncology-playlist



Episode 1:
Introduction



Episode 2:
Pain and Suffering



Episode 3:
Choosing a
Provider



Episode 4:
Communication
and Trust



Episode 5:
A Patient's Worth



Episode 6:
Financial Toxicity



Episode 7:
Delay in Diagnosis
and Treatment

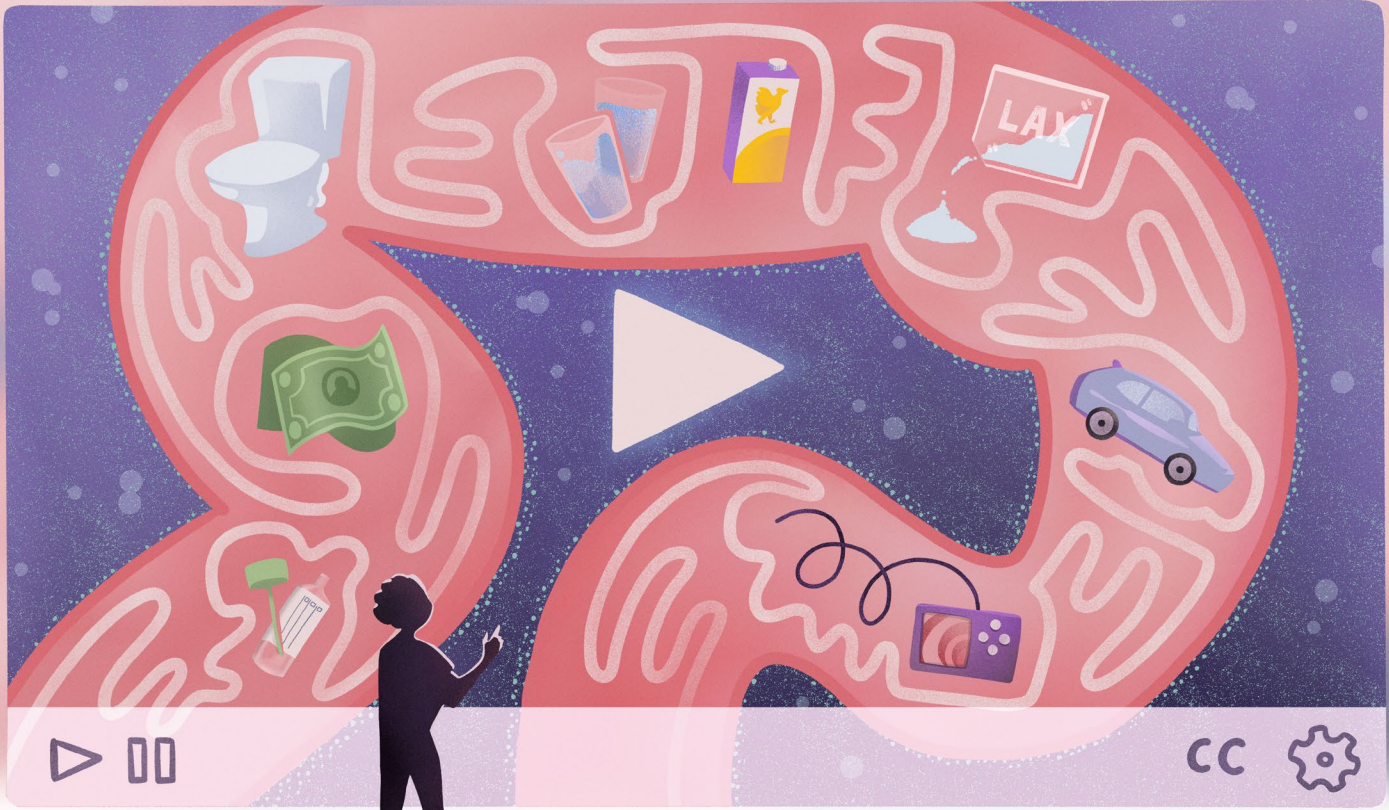


Illustration by Stephanie Liszewski

Can Video Intervention Decrease Fear of Colonoscopy?

Safety-net hospitals in the U.S. serve 28 - 31 million low-income and racially/ethnically diverse people annually.

The fecal immunochemical test (FIT) is an accessible colon cancer screening option for patients without access to health care clinics. At Seattle's Harborview Medical Center (a large, urban **safety-net hospital**) only about 41% of patients with an abnormal FIT completed a colonoscopy within one year. Failure to receive a timely follow-up colonoscopy is associated with a threefold increased risk of advanced-stage colorectal cancer (CRC) and 16% higher CRC mortality. Rachel Issaka, MD, MS,

designed a pilot study examining the impact of an educational video that addresses fear of colonoscopy and emphasizes the importance of follow-up care to prevent CRC.

Dr. Issaka's team collaborated with Solid Line Media to develop an 8-minute video, designed to be culturally competent and accessible to those with low health literacy. Over 50 participants have enrolled in the randomized study. All



A lack of colonoscopy within 1 year of a positive FIT result is associated with a 3-fold increased risk of advanced-stage CRC.



There is a 16% higher CRC mortality rate if colonoscopy is completed after 1 year, compared to if completed within 2 weeks.

Corley DA, Jensen CD, Quinn VP, et al. Association Between Time to Colonoscopy After a Positive Fecal Test Result and Risk of Colorectal Cancer and Cancer Stage at Diagnosis. *JAMA*. 2017;317(16):1631-1641.

Meester RG, Zauber AG, Doubeni CA, et al. Consequences of Increasing Time to Colonoscopy Examination After Positive Result From Fecal Colorectal Cancer Screening Test. *Clin Gastroenterol Hepatol*. 2016;14(10):1445-1451 e1448.



participants take a pre-survey that includes questions about their self-efficacy, fear of colorectal cancer and intent to complete a colonoscopy. Those assigned to watch the video were also given a post-survey. Early data suggests the video improved participants' knowledge about CRC prevention, causes and symptoms and decreased fear. In future research, Dr. Issaka plans to integrate a similar video as one of the elements of a comprehensive CRC prevention package.



“To improve follow-up of abnormal cancer screening tests, including colorectal cancer, interventions that address multiple barriers are needed. This video decision aid was developed to address patient’s fear of colonoscopy, which our research found to be a significant barrier to following up abnormal colorectal cancer screening tests.”

— Dr. Rachel Issaka, Principal Investigator



Above: Dr. Issaka and actress Julie Fish on set filming a scene for the video intervention. Photo by Ari Bell-Brown. Top: A still image from the intervention video. Video still courtesy of Solid Line Media.

Value in Cancer Care Summit



Achieving Quality Cancer Care In 2023 And Beyond

Back for the first time in person since 2019, HICOR’s 8th Value in Cancer Care Summit brought together 150 patients, patient advocates, clinicians, researchers, policymakers, insurance executives and hospital administrators in November 2023 to discuss the state of cancer care delivery, and to brainstorm ways to improve care for all.

Scott Ramsey, MD, PhD, kicked off the summit with an overview of the most recent Community Cancer Care Report, which HICOR produces annually. The report shows clinic-level cancer care quality measures linked to cost and allows providers to examine regional trends and identify

opportunities to improve care. Several Washington state clinics showed significant improvements on specific metrics, including guideline-appropriate therapy for breast cancer, colorectal cancer and lung cancer. The report also includes new metrics, such as biomarker and germline testing for some cancers and timeliness of care from diagnosis to treatment.

The rest of the day was filled with interactive sessions from national leaders and other stakeholders, delving into how to address disparities in access to high quality cancer care. Attendees were called to get involved by lending their expertise to the development of the Washington State Comprehensive Cancer Control Plan, a guide for prevention



“It’s important for us as researchers and clinicians to raise our voices through our research and lift them up to policy makers.”

— Dr. Veena Shankaran, Co-Director, HICOR

Above: (left) Katie Treend, MPH, lead program staff for the Washington State Cancer Control Program, (middle) Dr. Scott Ramsey, HICOR director, presents at the Value in Cancer Care Summit, (right) A summit attendee shares their thoughts. **Left:** Dr. Veena Shankaran, Co-Director of HICOR. *Photos by Connor O’Shaughnessy.*

and control efforts to reduce the burden of cancer in Washington state. They engaged in a vibrant discussion about racism in health care with a panel of patients and medical oncologists. Summit attendees also participated in a brainstorming session where they shared their perspectives on the barriers facing patients and community clinics when it comes to participating in research, and what can be done to remove them.

How can we improve disparities?

Robin Yabroff, PhD, MBA, of the American Cancer Society and Ray Osarogiagbon, MD, of Baptist Health Care, provided macro and micro views of strategies to decrease cancer disparities.

“The U.S. has the highest per capita spending on cancer care among all high-income countries, but many people still don’t have access to basic cancer prevention and early detection services.”

— Dr. Robin Yabroff,
Scientific Vice President of
Health Services Research,
American Cancer Society



“We have to meet people where they are – build the infrastructure in the places where people go to get care.”

— Dr. Ray Osarogiagbon,
Chief Scientist, Baptist
Memorial Health Care



Dr. Yabroff noted the country’s high cost — and low quality — of health care, pointing out that a third of adults in the U.S. simply did not receive any health care in the last year due to its high cost. Medicaid expansion would help tremendously, she said. “We have plenty of evidence that Medicaid expansion is associated with better care, access and outcomes.”

Dr. Osarogiagbon presented his efforts to curb lung cancer in Tennessee. About 20% of lung cancer patients are nonsmokers, which makes them ineligible for low-dose CT lung cancer (LDCT) screening. He instituted a lung nodule program, where incidental lung nodule findings found on CT scans done for other reasons were flagged for follow-up, resulting in additional early-stage diagnoses.



Top of page: Dr. Ray Osarogiagbon, Baptist Health Care **Above:** (left) Dr. Heather Cheng, Director of Prostate Cancer Genetics Clinic, (right) Panel Discussion: Bridgette Hempstead, Jeannie Williams, Dr. Hannah Linden, Dr. Nancy Davidson, Dr. Paul Buckley.
Photos by Stefan Muehleis.

HICOR Fellows at ASCO 2023

Each year, HICOR hosts Fred Hutch Hematology-Oncology Fellows interested in developing outcomes research programs. With mentoring from HICOR faculty and data from the HICOR repository, trainees are well supported in conducting their own outcomes research projects. This year, three of our trainees were invited to present their study findings at the American Society of Clinical Oncology (ASCO) Meeting.



Lauren Shih, MD

Lauren Shih, MD, led a study examining the use of recommended molecular testing among patients with metastatic non-small cell lung cancer in Washington state. The study found that although the overall rate of testing was high (90%), rates were significantly lower among Hispanic patients than non-Hispanic patients (77.8% versus 90.7%), and lower among older patients, males, and those with Medicaid insurance. These disparities should be addressed to ensure equitable access to effective treatment.

C. Natasha Kwendakwema, MD, and Hiba Khan, MD, MPH, presented a study examining the impact of financial toxicity on cancer outcomes and costs of care. They used data from HICOR's repository to identify adverse financial events (AFE)—such as charge-offs, third-party collections, and delinquent mortgage payments. Their findings showed an association between adverse financial events and increased end of life care utilization and greater costs at the end of life. Results also showed that patients with AFEs were more likely to have multiple emergency department or inpatient visits at end of life, and more likely to pass away in a hospital.

Dr. Khan also presented results showing that patients dealing with financial pressures have increased risk of mortality, higher healthcare utilization and greater costs compared to patients who do not experience AFEs.



Drs. C. Natasha Kwendakwema (left) and Hiba Khan (right) presented their studies on financial toxicity in cancer patients at the American Society of Clinical Oncology (ASCO) Meeting in June 2023. *Photo courtesy of Claire Hudson.*

Next page: Fred Hutch/UW/Seattle Children's Cancer Consortium researchers (from left) Drs. Nancy Davidson, Veena Shankaran, Doug Hawkins, Rachel Yung (second from right) and Scott Baker (far right) met with Dr. Jill Biden (center, in green) to discuss the Cancer Moonshot at Fred Hutch. Leah Marcoe, a Seattle breast cancer survivor and teacher (beside Biden), was also invited to share her story with the First Lady. *Photo by Official White House Photographer Erin Scott.*



Awards and Recognition

HICOR investigators are leaders in improving the value of cancer care delivery. Throughout the past year, they have been invited to share their expertise, recognized for their research and received accolades.

Dr. Veena Shankaran Cancer Moonshot Discussion with Dr. Jill Biden

First Lady Jill Biden visited Fred Hutch in September 2023 to discuss the Biden Cancer Moonshot. HICOR Co-Director Veena Shankaran, MD, MS, was one of the researchers selected to participate in a dialogue with Dr. Biden, where she highlighted the importance of addressing financial toxicity often faced by cancer patients and their families.

Seattle Magazine’s Top Docs List
Veena Shankaran, MD, MS, received the 2023 Seattle Magazine’s Top Doctors award, which recognizes the region’s top doctors. She was awarded in the medical oncology category.

Dr. Chris Su American Society of Hematology Scholar Award in Clinical Research

Chris Su, MD, MPH, received the 2023 American Society of Hematology Scholar Award in Clinical Research. This award supports early career investigators, recognizing their remarkable contributions and potential to transform the field of hematology.

Dr. Hiba Khan American Society of Clinical Oncology Young Investigator Award

Hiba Khan, MD, received the 2023 Young Investigator Award from the American Society of Clinical Oncology for her abstract, “Dismantling Disparities in Access to Oral Novel Hormonal Therapies in Prostate Cancer — A Mixed-Methods Analysis from a Population, Systems, and Patient-Centered Lens.”

Dr. Rachel Issaka Puget Sound Business Journal Health Care Heroes Award: Health Equity Champion

Rachel Issaka, MD, MS, was recognized for her respected voice for improving cancer care, reducing health disparities and prioritizing equity, diversity and inclusion in health care through local and national advocacy work.

Seattle Met’s Top Doctors Award

Rachel Issaka, MD, MS, received the 2023 Seattle Met Top Doctors award, which recognizes the best health care professionals in the region. She was awarded in the gastroenterology category.

Select Publications

- **Ramsey SD, Bender MA, Li L, Johnson KM, Jiao B, Devine B, Basu A.** Prevalence of comorbidities associated with sickle cell disease among non-elderly individuals with commercial insurance-A retrospective cohort study. *PLoS One.* 2022 Nov 29;17(11):e0278137.
- **Liu JJ, Decuir N, Kia L, Peterson J, Miller C, Issaka RB.** Tools to Measure the Impact of Structural Racism and Discrimination on Gastrointestinal and Hepatology Disease Outcomes: A Scoping Review. *Clin Gastro & Hep.* January 2023.
- **Su, Chris and Shankaran V.** Defining the Role of the Modern Oncology Provider in Mitigating Financial Toxicity. *J Am Coll Radiol.* 2023 Jan;20(1):51-56.
- **Rivers Z, Roth JA, Wright W, Rim SH, Richardson LC, Thomas CC, Townsend JS, Ramsey SD.** Translating an Economic Analysis into a Tool for Public Health Resource Allocation in Cancer Survivorship. *MDM Policy Pract.* 2023 Feb 9;8(1):23814683231153378.
- **Chen A, Kwendakwema N, Vande Vusse LK, Narayanan M, Strizich L, Albert T, Wu C.** Outcomes in quality improvement and patient safety training: moving from in-person to synchronous distance education. *BMJ Open Qual.* 2023 Mar;12(1):e002176.
- **Nascimento de Lima P, van den Puttelaar R, Hahn AI, Harlass M, Collier N, Ozik J, Zauber AG, Lansdorp-Vogelaar I, Rutter CM.** Projected long-term effects of colorectal cancer screening disruptions following the COVID-19 pandemic. *Elife.* 2023 May 2;12:e85264.
- **Khan HM, Ramsey SD, Shankaran V.** Financial Toxicity in Cancer Care: Implications for Clinical Care and Potential Practice Solutions. *J Clin Oncol.* 2023 Jun 1;41(16):3051-3058.
- **Savage T, Sun Q, Bell-Brown A, Katta A, Shankaran V, Fedorenko C, Ramsey SD, Issaka RB.** Association Between Patient-Level, Clinic-Level, and Geographical-Level Factors and 1-Year Surveillance Colonoscopy Adherence. *Clin Transl Gastroenterol.* 2023 Jul 1;14(7):e00600.
- **Ramsey SD, Bansal A, Li L, O'Donnell PV, Fuchs EJ, Brunstein CG, Eapen M, Thao V, Roth JA, Steuten LMG.** Cost-Effectiveness of Unrelated Umbilical Cord Blood Transplantation versus HLA-Haploidentical Related Bone Marrow Transplantation: Evidence from BMT CTN 1101. *Transplant Cell Ther.* 2023 Jul;29(7):464.e1-464.e8. doi: 10.1016/j.jtct.2023.04.017.
- **Brenner AT, Rohweder CL, Wangen M, Atkins DL, Ceballos RM, Correa S, Ferrari RM, Issaka RB, Ittes A, Odebunmi OO, Reuland DS, Waters AR, Wheeler SB, Shah PD.** Primary care provider perspectives on the role of community pharmacy in colorectal cancer screening: a qualitative study. *BMC Health Serv Res.* 2023 Aug 23;23(1):892.
- **Bell-Brown A, Watabayashi K, Delaney D, Carlos RC, Langer SL, Unger JM, Vaidya RR, Darke AK, Hershman DL, Ramsey SD, Shankaran V.** Assessment of financial screening and navigation capabilities at National Cancer Institute community oncology clinics. *JNCI Cancer Spectr.* 2023 Aug 31;7(5):pkad055.
- **Verdini NP, Gelblum DY, Vertosick EA, Ostroff JS, Vickers AJ, Gomez DR, Gillespie EF.** Evaluating a Physician Audit and Feedback Intervention to Increase Clinical Trial Enrollment in Radiation Oncology in a Multisite Tertiary Cancer Center: A Randomized Study. *Int J Radiat Oncol Biol Phys.* 2023 Sep 27:S0360-3016(23)07938-5.
- **Issaka RB, Bell-Brown A, Hopkins T, Chew LD, Strate LL, Weiner BJ; Endoscopy Rideshare Working Group.** Health System-Provided Rideshare Is Safe and Addresses Barriers to Colonoscopy Completion. *Clin Gastroenterol Hepatol.* 2023 Oct 6:S1542-3565(23)00770-X.
- **Narra LR, Verdini N, Lapen K, Nipp R, Gillespie EF.** Patient-Reported Outcomes in Clinical Trials: From an Endpoint to an Intervention in Cancer Care. *Semin Radiat Oncol.* 2023 Oct;33(4):358-366.
- **featured on next page Rutter CM, Nascimento de Lima P, Maerzluff CE, May FP, Murphy CC.** Black-White disparities in colorectal cancer outcomes: a simulation study of screening benefit. *J Natl Cancer Inst Monogr.* 2023 Nov 8;2023(62):196-203.
- **Hershman DL, Bansal A, Barlow WE, Arnold KB, Watabayashi K, Bell-Brown A, Sullivan SD, Lyman GH, Ramsey SD.** Intervention Nonadherence in the TrACER (S1415CD) Study: A Pragmatic Randomized Trial of a Standardized Order Entry for CSF Prescribing. *JCO Oncol Pract.* 2023 Dec;19(12):1160-1167.
- **Ferrari RM, Atkins DL, Wangen M, Rohweder CL, Waters AR, Correa S, Richmond J, van Rensburg D, Ittes A, Odebunmi O, Issaka RB, Ceballos R, Shah PD, Wheeler SB, Brenner AT.** Patient perspectives on a proposed pharmacy-based colorectal cancer screening program. *Transl Behav Med.* 2023 Dec 15;13(12):909-918.
- **Shah PD, Wangen M, Rohweder CL, Waters AR, Odebunmi OO, Marciniak MW, Ferrari RM, Wheeler SB, Brenner AT.** Patient Willingness to Use a Pharmacy-Based Colorectal Cancer Screening Service: A National Survey of U.S. Adults. *Cancer Epidemiol Biomarkers Prev.* 2024 Jan 9;33(1):63-71.
- **van den Puttelaar R, Nascimento de Lima P, Knudsen AB, Rutter CM, Kuntz KM, de Jonge L, Alarid Escudero F, Zauber AG, Hahn AI, Inadomi JM, Lansdorp-Vogelaar I.** CMS coverage decision: implications for cost-effectiveness of colorectal cancer screening, Gastroenterology, accepted for publication, February 2024.

FEATURED PUBLICATION

Black-White Disparities in Colorectal Cancer Outcomes: A Simulation Study Of Screening Benefit

Over the last 30 years colorectal cancer (CRC) screening methods and treatments have become more effective at finding and successfully treating CRC. Unfortunately, these improvements have not been equally distributed. Black populations have lower screening rates, higher rates of newly diagnosed cases, and worse survival than White populations. At the same time, rates of early onset CRC, diagnosed before age 50, are increasing. To better understand how differences in incidence and care affect differences in CRC outcomes, Dr. Rutter and colleagues conducted a simulation modeling study to compare projected screening

benefits for Black and White populations. In a novel approach, the model was designed to account for historical data about CRC risk, increase in risk of early onset CRC, tumor location and Black-White disparities in CRC-specific and overall survival.

Results showed that screening is similarly effective for Black and White populations, accounting for changing age-related risk and shifts in tumor location.

Rutter CM, Nascimento de Lima P, Maerzluft CE, May FP, Murphy CC. Black-White disparities in colorectal cancer outcomes: a simulation study of screening benefit. *J Natl Cancer Inst Monogr.* 2023 Nov 8;2023(62):196-203.



“If equally screened and treated, the US Black population would have a larger CRC incidence reduction than the White population, suggesting that disparities are largely driven by screening and treatment rather than either risk or tumor site differences.”

— Dr. Carolyn Rutter,
Principal Investigator

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Hutchinson Institute for Cancer Outcomes Research Team



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Front left to right: Lily Li, Ari Bell-Brown, Karma Kreizenbeck, Erin Gillespie, Veena Shankaran, Angie Madrid, Catherine Fedorenko, Kate Watabayashi, Hiba Khan, Kristy Drury, Sarah Miller

Not Pictured: Judy Nelson, Chris Maerzluft, Chris Su, C. Natasha Kwendakwema, Carolyn Rutter, Lisa Rose, Amanda Kimura, Lauren Shih, Aasthaa Bansal, Christoph Lee, Janie Lee, Mengyang Di



Hutchinson Institute for Cancer Outcomes Research

To learn more, scan the QR code or visit FredHutch.org/HICOR