

45th Annual *Virtual* Meeting March 29 - April 1, 2021 Program & Abstracts





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@ASPrevOnc #ASPO2021

The ASPO Executive Committee offers special thanks to Program Co-Chairs, Dr. Sandi Pruitt and Dr. Elisa Bandera, for their extraordinary commitment in facilitating the development of the program for this meeting, and to the entire 2021 ASPO Program Committee for sharing their expertise and valuable contributions.

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WELCOME

Once again, this is not how we thought we would be meeting when we started planning a year ago. When we transitioned to a virtual meeting last year, we thought we would surely be seeing each other in person this March, but of course that is not possible. Fortunately, we have the technology to still communicate the critical, salient, and significant science that you conduct.

Last year as the reality of COVID dawned on all of us, and we observed the extraordinary impact it was having on communities of color, I decided that the theme for this year's meeting would focus on race, culture, and health disparities. As the year went on the repeated incidents of racist violence against the Black community and the Asian American and Pacific Islander community, as well as ongoing discrimination and ill-treatment of other communities of color, graphically illustrated the necessity of addressing racism in our work and personal lives. Drs. Sandi Pruitt and Elisa Bandera embraced this theme and agreed to chair the program committee, and they recruited a dream team of committee members. Thank you all for your creativity and hard work in developing an excellent program.

They developed symposia related to structural racism, access to care, the digital divide and its implications for health, and the impact of COVID on cancer prevention. The committee and staff also have created innovative formats for poster presentations, and the meeting includes the always highly valued special sessions for early stage investigators, associate directors and program leaders, community and science sessions, paper sessions, and sessions organized by our Special Interest Groups. We have a busy week planned, and I'm confident that our interactions around the science will be significant and meaningful. Science matters! Through science, along with a commitment to lift up our communities, we can prevent cancer, enhance quality of life, and conquer viral epidemics. So listen, share, discuss. We need this interaction to keep our science moving forward, and the world needs it too. Welcome to ASPO 2021.

Dr. Karen Basen-Engquist ASPO President 2019-2021

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Dr. Elena Martinez Incoming ASPO President

I am truly honored to serve as President of this wonderful organization. Thank you for trusting me to be your leader. I joined ASPO as a post-doc and essentially grew up academically within the ASPO family. I looked forward each year to participating in the annual meeting and seeing familiar and new faces. Today, I look forward to when we can gather again in person. I am very grateful to Dr. Karen Basen-Enquist, outgoing President, who has taught me so much about leadership, tenacity, and commitment. I have big shoes to fill and look forward to her continued guidance.

It brings me great pride to be the first Hispanic ASPO President. As Vice President Harris has said, I may be the first, but am heartened to know that I will not be the last. One of my greatest joys is to witness the diversity and energetic spirit in the next generation of ASPO members. I am fully committed to continue to support ASPO's next generation to help you succeed.

As I noted in my nomination statement, another one of my commitments is to promote cancer health equity, which is even more important now than when I was nominated. We have many challenges ahead, but I see great enthusiasm for sustained change. Every single member of this great organization can contribute, no matter what discipline, racial/ethnic group, or gender identity. Please join me in putting ASPO at the forefront, to serve as a model organization with a clear commitment to end racism in our country and beyond. I look forward to working with you and hearing your ideas on how we can accomplish this.

STATEMENT AGAINST RACISM

The continued senseless killings and racist violent acts upon people of color have been emotionally overwhelming and traumatic. In 2020, we saw the blatant disregard for Black lives in the murder of George Floyd, Breonna Taylor, and Ahmaud Arbery. Since the COVID-19 pandemic, we have seen a dramatic rise in racist-fueled violence perpetuated against the Asian American and Pacific Islander (AAPI) communities, with nearly 4000 racist incidents reported to the organization AAPI Hate. The Atlanta murder of seven AAPIs further compounded this trauma. These events bring to the forefront the significant and inexcusable racism that continues to be an epidemic in our country. We stand behind the Black and AAPI communities that continue to bear the brunt of these brutal acts of violence. ASPO expresses our solidarity with the protests against the historical racial injustices experienced within the Black community and our understanding of the historical and ongoing xenophobic, misogynistic, and hate based crimes experienced by our AAPI communities. Our commitment is to all marginalized communities and we recognize that these struggles are intertwined.

ASPO is an organization that values differences, diversity, shared compassion for humanity, and a commitment to research to reduce disparities in health. We call upon our colleagues, members, and the broader scientific community, to commit to anti-racism. As an organization, ASPO will continue to unequivocally denounce and condemn racialized violence and hate. We pledge to advocate on your behalf and support you as we re-commit to address the deep systemic injustice of racism and advancing equity, inclusion, and health for all people. We cannot and will not stay silent. Action is necessary to make a difference, and so we commit to

- Work to continue to grow a more inclusive and diverse organization at all levels, led by the new Diversity and Inclusion Committee
- Make our meetings and organization safe places to express our views, concerns, fears, and frustrations due to these tragic events.
- Encourage our members to get involved in advocacy against racism.

We know that together we can make a difference. The call to action should also give us pause to think about Dr. Martin Luther King Jr.'s insightful words delivered in his last Christmas sermon before his assassination: *"It really boils down to this: that all life is interrelated. We are all caught in an inescapable network of mutuality, tied in a single garment of destiny. Whatever affects one directly, affects all indirectly."*











THANK YOU

Special Interest Group Leadership

Behavioral Science & Health Communication Chair: Carmina Valle (2021) Vice-Chair: Linda Ko

Molecular Epidemiology & The Environment Chair: Elizabeth Hibler (2022) Vice-Chair: Sheetal Hardikar

Lifestyle Behaviors, Energy Balance & Chemoprevention Chair: Marji McCullough (2021) Vice-Chair: Cynthia Thomson

Survivorship & Health Outcomes/ Comparative Effectiveness Research Chair: Kate Weaver (2022)

Cancer Health Disparities Chair: Theresa Hastert (2022) Vice-Chair: Alicia Best

Early Detection & Risk Prediction of Cancer Chair: Jasmin Tiro (2020) Vice-Chair: Kate Rendle

Early Career Development Chair: Tracy Crane (2022)

Global Cancer Research Chair: Ramzi Salloum (2021) Vice-Chair: Irene Tami-Maury

Abstract Reviewers

Thank you to the abstract reviewers who volunteered their time to review and score more than 200 submissions.

Eric Adjei Boakye Elisa Bandera Karen Basen-Engquist Lynn Chollet Hinton Shannon Christy Claire Conley Tracy Crane Christina Dieli-Conwright Sheetal Hardikar Theresa Hastert Elizabeth Hibler Jinani Jayasekera Saira Kahn Erin Kent Linda Ko Lawrence Kushi Amy Leader Scarlett Lin Gomez Purnima Madhivanan Sarah Markt Marji McCullough Erin Mobley Lisa Newman Eval Oren Caryn Peterson Sandi Pruitt Bo Oin Kate Rendle Ramzi Salloum Joel Segel Jamie Studts Jasmin Tiro Carmina Valle Richard Warnecke Kate Weaver Karen Wernli Alexandra White Shawn Zamani Charnita Zeigler-Johnson Nur Zeinomar Xiaotao Zhang

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Funding

Funding for this conference was made possible (in part) by 1R13CA261074-01 from the National Cancer Institute. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention by trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

MONDAY, MARCH 29

AGENDA

	eastern standard time, recordings will be available April - October 2021				
SUNDAY, MARCH 28					
12:00 PM - 4:00 PM	Cancer Prevention Control Associate Directors/Program Leaders Workshop Invitation only; separate registration required. Agenda on page 16.				
	Organizer: Electra Paskett, PhD, The Ohio State University				
MONDAY , MARCH 29					
12:00 PM - 1:15 PM	Early Career Investigator Session 1 - Perspectives on Leveraging Existing Cohort Datasets for Secondary Data Analyses: From Initiation to Publication				
	Chairs: Marvin Langston, PhD, MPH, Division of Research, Kaiser Permanente Northern California and Meghan Skiba, PhD, MS, MPH, RDN, School of Nursing, Oregon Health and Sciences University				
	Speakers: Elizabeth Hibler, PhD, MPH, Northwestern University, Zuckerman College of Public Health, Justin Xavier Moore, PhD, MPH, Augusta University at the Medical College of Georgia, Elizabeth A. Platz, ScD, MPH, Johns Hopkins Bloomberg School of Public Health				
	Community & Science Session 1 – Collaboration in Community Outreach & Engagement Panel				
	<i>Chairs:</i> Lorna McNeill, PhD, MPH, University of Texas MD Anderson Cancer Center & Hayley Thompson, PhD, Karmanos Cancer Institute				
	Speakers: Nyasha Nyamapfene, MPP, MBA, Gospel Run, Alison Herrmann, PhD, MS, UCLA Cancer Center, Mayra Serrano, MPH, CHES, City of Hope Cancer Center, Robin Vanderpool, DrPH, National Cancer Institute				
1:30 PM - 2:00 PM	Flash Talks: Culture Join us each day for short talks and O&A with selected poster presenters				
	Moderator: Elisa Bandera, MD, PhD, Rutgers Cancer Institute of New Jersey				
	What social factors are most strongly associated with the reduced spread of breast cancer cultural beliefs among African American women? Nyahne Bergeron, MPH, University of Illinois at Chicago				
	Opportunities and Challenges for Creating Sexual and Gender Minority Cancer Health Equity: Patient and Caregiver Perspectives from a Qualitative Pilot Study Miria Kano, PhD, University of New Mexico				
	Measuring cancer awareness in Africa: Considering cultural relevance of measures including the Cervical Cancer Awareness Measure Breanne Lott, MPH, BA Global Health, University of Arizona				

Patient-Centered Factors Associated with Chemotherapy Communication in African-American and White Breast Cancer Patients Kerri-Anne Mitchell, MPH, DrPH, Virginia Commonwealth University School of Medicine

AGENDA

MONDAY, MARCH 29 cont.

2:15 PM – 3:00 PM	Opening Ceremony Includes Presidential Address, 2020 & 2021 Cullen & Fraumeni Award Presentations, & ASPO Business Meeting
3:00 PM - 4:30 PM	Symposium - Structural Racism, Discrimination, and Cancer
	Chairs: Scarlett Lin Gomez. MPH. PhD. UCSF &
	Lisa Newman, MD, MPH, Weill Cornell Medicine
	Addressing Anti-Asian Racism
	Scarlett Lin Gomez, MPH, PhD, UCSF
	Why Community Matters in the Fight Against COVID and Cancer
	Robert Winn, MD, Virginia Commonwealth University
	Structural Racism as a Root Cause of Cancer Disparities:
	Constructing New Systems for Health Equity
	Zinzi Bailey, ScD, MSPH, University of Miami
	Structural racism, discrimination, and cancer among the American Indian populations

Teshia Solomon, PhD, University of Arizona

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TUESDAY, MARCH 30

11:00 AM - 12:00 PM	Twitter Poster Conference Follow ASPO on Twitter (@ASPrevOnc) and interact with poster presenters
12:00 PM - 1:30 PM	Symposium - The Many Shades of Unequal Access to Cancer Prevention & Care
	Chairs: Melissa Simon, MD, MPH, Northwestern University & Otis Brawley, MD, Johns Hopkins University
	Financial hardship among cancer survivors in the United States Robin Yabroff, PhD, American Cancer Society
	Measuring and intervening on financial hardship in cancer care Reggie Tucker-Seeley, ScD, USC
	Reforms Addressing Financial Burden Ezekiel Emanuel, MD, PhD, University of Pennsylvania
1:45 PM - 2:15 PM	Flash Talks: Lifestyle Behaviors, Energy Balance & Chemoprevention Join us each day for short talks and Q&A with selected poster presenters
	Moderator: Marji McCullough, SCD, RD, American Cancer Society
	Early-life exposures and age at breast development in the Sister Study cohort Mandy Goldberg, PhD, MPH, National Institute of Environmental Health Sciences
	Metabolic Health Phenotype and Risk of Cancer in the Utah Obesity Cohort Study Prasoona Karra, MS, University of Utah
	Adolescent physical activity and breast cancer risk before age 50 years: findings from the Prospective Family Study Cohort (ProF-SC) Rebecca Kehm, PhD, MPH, Columbia University
	Gestational growth and risk of young-onset colorectal cancer Caitlin Murphy, PhD, MPH, University of Texas Southwestern Medical Center
	Early life exposure to tobacco smoke and ovarian cancer risk in adulthood Tianyi Wang, PhD, H. Lee Moffitt Cancer Center and Research Institute
2:30 PM - 3:30 PM	Concurrent Paper Sessions
	Paper Session 1: Healthcare Delivery & Communication in Cancer Prevention & Control
	Moderator: Sandi Pruitt, PhD, UT Southwestern
	Patient Experience of Interpersonal Processes of Care and Subsequent Utilization of Hormone Therapy for Non-Metastatic Breast Cancer Bing Ying Poon, PhD, Kaiser Permanente Northern California
	Implementation of QI coaching versus physician communication training for improving HPV vaccination in primary care: A randomized implementation trial
	Brigid Grabert, PhD, JD, MPH, Lineberger Comprehensive Cancer Center and University of North Carolina Gillings School of Global Public Health
	Recommending inequality? Patterns of US healthcare providers' HPV vaccine recommendations
	Wei Yi Kong, MA, University of North Carolina at Chapel Hill
	A prospective pilot study of lung cancer screening in patients at high risk for lung cancer who do not meet current screening guidelines Erin Hirsch, MSPH, MSCS, University of Colorado Anschutz Medical Campus
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AGENDA

TUESDAY, MARCH 30 cont.

2:30 PM - 3:30 PM	Paper Session 2: Impact of COVID-19 through the Cancer Continuum					
	Moderator: Elisa Bandera, MD, PhD, Rutgers Cancer Institute of New Jersey					
	Social Support and Mental Health during the COVID19-pandemic among					
	cancer survivors: an analysis of the COVID Impact Survey					
	Jessica Islam, PhD, MPH, UNC Lineberger Comprehensive Cancer Center					
	Voices of Community Organizations: How cancer centers can support communities in the face of COVID-19					
	Jessica Austin, PhD, MPH, Columbia Mailman School of Public Health					
	Financial and Employment Impacts of Cancer and COVID-19 Among					
	Theresa Hastert, PhD, MPP, Wayne State University/Karmanos Cancer Institute					
	Impact of COVID-19 pandemic on healthcare delivery, behavioral outcomes, and financial stress in 1,253 individuals with cancer at Huntsman Cancer Institute (HCI) Anita Peoples, PhD, MPH, Huntsman Cancer Institute, University of Utah					
3:45 PM - 4:45 PM	Concurrent SIG Sessions					
	Effectively Utilizing Community Engagement to Eliminate Cancer Health Disparities, presented by the Cancer Health Disparities SIG					
	Chair: Theresa Hastert, PhD, MPP, Wayne State University Karmanos Cancer Institute					
	Speakers: Hayley Thompson, PhD, Wayne State University School of Medicine & Lorna H. McNeill, PhD, MPH, University of Texas M.D. Anderson Cancer Center					
	Considerations for Cultural Competency in Molecular and Environmental Enidemiology					

Considerations for Cultural Competency in Molecular and Environmental Epidemiology, presented by the Molecular Epidemiology & the Environment SIG

Chair: Elizabeth Hibler, PhD, MPH, Northwestern University

Speakers: Anita Kinney, PhD, RN, FAAN, FABMR, Rutgers University & Felina Cordova-Marks, DrPh, MPH, MS, University of Arizona

AGENDA

WEDNESDAY, MARCH 31

11:00 AM - 12:00 PM	Twitter Poster Conference Follow ASPO on Twitter (@ASPrevOnc) and interact with poster presenters.				
12:00 PM - 1:30 PM	Symposium - Novel Remote Technologies that Bridge the Digital Divide				
	Chair: Karen Basen-Engquist, PhD, MPH, The University of Texas M.D. Anderson Cancer Center				
	Discussant: Lisa Newman, MD, MPH, Weill Cornell Medicine				
	Mobile Digital Technology as a Gateway for Reducing Prostate Cancer Disparities among African- American Men Brian Rivers, PhD, MPH, Morehouse School of Medicine				
	Optimizing eHealth in Cancer Control and Survivorship for Hispanic/Latinx Breast Cancer Patients Potica Vanaz, BbD, Northwestern University				
	betha fallez, PhD, Northwestern Oniversity				
	Linking and Amplifying User-Centered Networks through Connected Health (L.A.U.N.C.H.) David Ahern, PhD, Brigham & Women's Hospital				
1:45 PM - 2:15 PM	Flash Talks: Survivorship & Health Outcomes				
	Join us each day for short talks and Q&A with selected poster presenters				
	Moderator: Kathryn Weaver, PhD, Wake Forest School of Medicine				
	Trends in heart disease mortality among US breast cancer survivors, from 1975-2017 Jacqueline B. Vo, PhD, RN, MPH, National Cancer Institute				
	A comparison of survey incentive methods among a sample of rural cancer survivors Derek Falk, PhD, Wake Forest School of Medicine				
	Health-related quality of life is associated with fecal microbial composition in breast cancer survivors				
	Kristen Smith, MS, RD, Auburn University				
	A Qualitative Inquiry of Cancer Caregiving during Young Adulthood: Challenges, Responsibilities, Social Support, and Teamwork Austin Waters, MSPH, Huntsman Cancer Institute				
	Lower-extremity lymphedema, physical functioning, and activities of daily living in the WHI LILAC survivorship cohort Xiaochen Zhang, MB, MPH, The Ohio State University				
2.20 014 - 2.20 014	Concurrent Paper Sessions				
2.50 PIVI - 5.50 PIVI	Paper Session 3: Lifecourse Exposures & Cancer				
	Moderator: Sandi Pruitt, PhD, UT Southwestern				
	Historical housing discrimination, indicators of disinvestment, and breast cancer outcomes nearly a century later Jesse Plascak, PhD, The Ohio State University				
	Residential proximity to dioxin-emitting facilities and risk of non-Hodgkin lymphoma in the NIH- AARP Diet and Health Study Rena Jones, PhD, MS, National Cancer Institute				

WEDNESDAY, MARCH 31 cont.



	Physical activity from adolescence through midlife and associations with obesity and endometrial cancer risk Pedro Saint-Maurice, PhD, National Cancer Institute
	Hair Product Use and Ovarian Cancer Risk Alexandra White, PhD MSPH, National Institute of Environmental Health Sciences
2:30 PM - 3:30 PM	Paper Session 4: New Findings in Cancer Survivorship Research
	Moderator: Elisa Bandera, MD, PhD, Rutgers Cancer Institute of New Jersey
	Feasibility of a group-based telehealth psychosocial intervention for women with Non-Small Cell Lung Cancer (NSCLC)
	Juliet Kroll, PhD, The University of Texas MD Anderson Cancer Center
	Multilevel Risk Factors for Weight Change after Breast Cancer Diagnosis Among Black Women
	Bo Qin, Ph.D., Rutgers Cancer Institute of New Jersey
	Circulating Inflammatory Proteins Associated with Dementia Risk in Older Adult Cancer Survivors in the Atherosclerosis Risk in Communities (ARIC) Study Chinenye Ugoji, BPharm, MPH, Johns Hopkins University
	Ethnic disparities in methotrexate neurotoxicity among children and adolescents with acute lymphoblastic leukemia Michael Scheurer, PhD, MPH, Baylor College of Medicine
3:45 PM - 5:00 PM	Early Career Investigator Session 2 - Research Resiliency: Navigating a Research or Career Setback and Moving Forward
	Chairs: Sheetal Hardikar, PhD, MBBS, University of Utah Huntsman Cancer Institute, Lauren Houghton, PhD, MSc, Columbia University Mailman School of Public Health, Nicole Niehoff, PhD, MSPH, National Institute of Environmental Health Sciences
	Speakers: Nur Zeinomar, PhD, MPH, Rutgers Cancer Institute of New Jersey, Theresa Hastert, PhD, MPP, Wayne State University Karmanos Cancer Institute, Yamile Molina, PhD, MPH, MS, University of Illinois at Chicago, David Wetter, PhD, MS, University of Utah Hunstman Cancer Institute
	Community & Science Session 2 - Striving and Thriving during COVID-19: COE Best Practices Panel
	Chairs: Lorna McNeill, PhD, MPH University of Texas MD Anderson Cancer Center & Hayley Thompson, PhD Karmanos Cancer Institute
	Speakers: Nathaniel Ferre, Huntsman Cancer Institute, Lynette Phillips, Huntsman Cancer Institute, Nikia Clark, Roswell Cancer Center, Mayra Serrano, MPH, CHES, City of Hope Cancer Center, Alejandra Martinez, Promoters for Better Health, Voncile Brown-Miller, Karmanos Cancer Institute, Knoll Larkin, MPH, Karmanos Cancer

Institute

THURSDAY, APRIL 1

11:00 AM - 12:00 PM	Twitter Poster Conference Follow ASPO on Twitter (@ASPrevOnc) and interact with poster presenters				
12:00 PM - 1:30 PM	Concurrent SIG Sessions				
12.00 1 10 1.50 1 10	Developing and Informing Effective Cancer Prevention and Control Strategies for Disparate Populations, presented by Lifestyle Behaviors, Energy Balance, Chemoprevention SIG Chairs: Marji McCullough, SCD, RD, American Cancer Society & Cyndi Thomson, PhD, RD, University of Arizona Zuckerman Family Center for Prevention & Health Promotion				
	Speakers: Erika Rees-Punia, PhD, American Cancer Society; David Garcia, PhD, Mel and Enid Zuckerman College of Public Health / University of Arizona Cancer Center, Kerri Winters-Stone, PhD, Oregon Health & Science University / Knight Cancer Institute, Robin Vanderpool, DrPH, Division of Cancer Control and Population Sciences, NCI				
	Survivorship 2.0: Provider and Patient Reflections on Cancer Care During the Pandemic, joint session presented by Behavioral Science and Health Communication SIG & Survivorship and Health Outcomes / Comparative Effectiveness Research SIG Chairs: Kathryn Weaver, PhD, Wake Forest School of Medicine & Carmina Valle, PhD, UNC Chapel Hill				
	Speakers: Philip Lammers, MD, Baptist Cancer Center & Dara Kurtz, Crazy Perfect Life				
1:45 PM - 2:15 PM	Flash Talks: Cancer Health Disparities Join us each day for short talks and Q&A with selected poster presenters				
	Moderator: Alicia Best, PhD, MPH, University of South Florida				
	Breast Cancer Surgery Experiences and Outcomes in Sex and Gender Minority Individuals: A Systematic Review Elizabeth Arthur, PhD, APRN-CNP, AOCNP, James Cancer Hospital, Ohio State University				
	High urinary thromboxane B2 associates with lethal prostate cancer in African American men and inversely correlates with aspirin use. Maeve Bailey-Whyte (Kiely), PhD, MPH, Laboratory of Human Carcinogenesis, National Cancer Institute, NIH				
	Estimation of contributing factors to racial disparities in epithelial ovarian cancer survival Holly Harris, ScD, MPH, Fred Hutchinson Cancer Research Center				
	Novel breast cancer susceptibility identified in African ancestry consortia under linkage peaks Heather Ochs-Balcom, PhD, University at Buffalo, SUNY				
	Disparities in Distress Screening in Lung and Ovarian Cancer Patients Elizabeth Rohan, PhD, MSW, Centers for Disease Control and Prevention				
2:30 PM - 4:00 PM	Symposium - Impact of COVID on Cancer Prevention and Control				
	Chairs: Elena Martinez, PhD, UC San Diego, Moores Cancer Center & Larry Kushi, ScD, Kaiser Permanente Northern California				
	Opening Remarks Marcella Nunez-Smith, MD, MHS, Yale School of Medicine				
	COVID-19 Disparities and Multilevel Efforts to Understand and Address Them Monica Webb Hooper, PhD, National Institutes of Health				

COVID-Adapted Colorectal Cancer Screening and Prevention: Avoiding more Casualties Samir Gupta, MD, UC San Diego

Sunday, March 29

12:00 PM	Welcome
	Electra Paskett, PhD, The Ohio State University
	Part 1: CCSG Application
12:00 PM - 12:45 PM	Population Science Programs
	Moderator: Robert Schnoll, PhD, University of Pennsylvania Panelists: Karen Glanz, PhD, MPH, University of Pennsylvania; Richard Hoffman, MD, MPH, University of Iowa
12:45 PM - 1:30 PM	Community Outreach and Engagement
	Moderator: Tim Rebbeck, PhD, Dana Farber Cancer Institute Panelists: Stephanie Wheeler, PhD, MPH, University of North Carolina; Hayley Thompson, PhD, Karmanos Cancer Institute-Wayne State University
1:30 PM - 2:15 PM	Review of Population Science and COE
	Moderator: Wendy Demark-Wahnefried, PhD, University of Alabama, Birmingham Panelists: Melissa Bondy, PhD, Stanford University; Anita Kinney, PhD, RN, Rutgers University
	Part 2: NCI Speaks
	Moderator: Robert Croyle, PhD, NCI, DCCPS
2:15 PM - 2:45 PM	DCCPS Updates
	Robert Croyle, PhD
2:45 PM - 3:15 PM	DCP Updates
	Philip Castle, PhD
3:15 PM - 3:45 PM	Cancer Centers Update
	Henry Ciolino, PhD
3:45 PM - 4:00 PM	Wrap-Up & Adjourn
	Electra Paskett, PhD

*Workshop is invitation only; separate registration required





2021 ASPO Joseph F. Fraumeni, Jr. Distinguished Achievement Award

Lucile Adams-Campbell, PhD Georgetown University Medical Center



2021 Joseph Cullen Award in Tobacco Research

Carolyn "Bo" Aldigé Prevent Cancer Foundation



2021 Award for Special Service to ASPO

Robert Croyle, PhD National Cancer Institute

American Cancer Society Registration Award

Pre- or Postdoctoral Fellow 10th Annual Calle/Rodriguez Minority Registration Award for a Top-Ranked Abstract (Travel Funded by The American Cancer Society)

Jessica Islam, PhD, MPH, UNC Lineberger Comprehensive Cancer Center

Social Support and Mental Health during the COVID19-pandemic among cancer survivors: an analysis of the COVID Impact Survey

ASPO Registration Awards

10th Annual Electra Paskett Registration Scholarship for the Top-Ranked Pre- or Post-doctoral Fellow

Cassandra Hathaway, MPH, CPH, Moffitt Cancer Center

Improving Survey Response Rates Among Patients at a Cancer Center During a Global Pandemic

Other ASPO Registration Awards Chosen from Top-ranked Abstracts

Chelsea Anderson, PhD, University of North Carolina

Long-term patterns of excess mortality among endometrial cancer survivors

Jessica Austin, PhD, MPH, Columbia Mailman School of Public Health Voices of Community Organizations: How cancer centers can support communities in the face of COVID-19.

Mandy Goldberg, PhD, MPH, National Institute of Environmental Health Sciences Early-life exposures and age at breast development in the Sister Study cohort

Juliet Kroll, PhD, The University of Texas MD Anderson Cancer Center Feasibility of a group-based telehealth psychosocial intervention for women with Non-Small Cell Lung Cancer (NSCLC)

Bing Ying Poon, PhD, Kaiser Permanente Northern California Patient Experience of Interpersonal Processes of Care and Subsequent Utilization of Hormone Therapy for Non-Metastatic Breast Cancer

NEW INVESTIGATORS

The new investigators workshop recruits pre- and post-doctoral investigators working in the area of preventive oncology. An experienced set of faculty members provide advice and mentoring, after listening to brief presentations by the investigators. Mentoring topics include science, grantsmanship and worklife balance.

Workshop Faculty

Deborah Glueck, PhD University of Colorado School of Medicine

Bette Caan, DrPH Kaiser Permanente

Judith Jacobson, DrPH Columbia University

Camille Ragin, PhD, MPH Fox Chase Cancer Center

Michael Scheurer, PhD, MPH Baylor College of Medicine

Feasibility of a Gratitude, Psychological, Spiritual (GPS) Intervention among Black Breast Cancer Survivors

Lakeshia Cousin, PhD, APRN, Moffitt Cancer Center

Mentor: Cathy Meade, PhD, RN, FAAN, FAACE

Evaluation of Quality and Access to BRCA1/2 Genetic Mutation Testing among US Females Identifying with Disadvantaged Health Populations for Breast and Ovarian Cancers

Kate Dibble, PhD, Johns Hopkins Bloomberg School of Public Health

Mentor: Avonne E. Connor, PhD, MPH

The influence of demographic, hospital, and clinical factors on the adoption of opportunistic salpingectomy for ovarian cancer risk reduction in the United States

Pritesh Karia, PhD, MPH, Columbia University Mailman School of Public Health

Mentor: Jeanine M. Genkinger, PhD, MHS

Racial & Ethnic Disparities and Trends in Stage-specific incidence for Lung Cancer in the United States, 2006-2017

Kristin Primm, PhD, MPH, University of Texas MD Anderson Cancer Center

Mentor: Shine Chang, PhD

Development and feasibility testing of a digital cooking intervention for Latina cancer survivors with overweight/obesity

Margaret Raber, DrPH, University of Texas MD Anderson Cancer Center

Mentor: Karen Basen-Engquist, PhD

Muscle Density as a Biomarker of Resilience in Head and Neck Cancer Patients

Amy Shaver, PharmD, MPH, University at Buffalo

Mentor: Katia Noyes, PhD, MPH

ORAL ABSTRACTS

Paper Session: Healthcare Delivery & Communication in Cancer Prevention and Control

Patient Experience of Interpersonal Processes of Care and Subsequent Utilization of Hormone Therapy for Non-Metastatic Breast Cancer

Poon BY, Kroenke CH, Hillyer GC, Lamerato LE, Stewart AL, Neugut AI, Hershman DL, Kushi LH

Presenter: Bing Ying Poon, PhD, Kaiser Permanente Northern California

Purpose: We examined the association between patient experience of care and utilization of hormone therapy (HT) in the treatment of non-metastatic hormone-receptor positive (HR+) breast cancer. Methods: Patients newly diagnosed with non-metastatic breast cancer were recruited from 2006 to 2010 for a longitudinal multisite cohort study in New York, NY, Detroit, MI, and Northern California. Of 1,145 patients surveyed, 797 had HR+ tumors eligible for HT and all necessary data. We assessed patient experience 4 to 8 weeks after recruitment using 6 subscales of the Interpersonal Processes of Care (IPC) survey: compassion, discrimination, and hurriedness in communication, as well as concern elicitation, result explanation, and patient-centered decision-making. Subscales ranged from 1 to 5 where higher values indicated better experiences. HT for 5 years is standard care for HR+ breast cancer so utilization was defined as time from diagnosis to HT initiation and time from HT initiation to early discontinuation before 5 years as calculated from follow-up survey responses. We evaluated the relationship between patient experience and utilization using Cox proportional hazard models, controlling for education, income, insurance, marital status, social support, site of care, age at diagnosis, stage, grade, tumor size, Charlson comorbidity index, and chemotherapy. Results: Median age at diagnosis was 59 years (interquartile range 51-66) with the majority diagnosed at clinical stage 1 (54%) and with low or moderate grade disease (78%). Less hurried communication was associated with increased probability of HT initiation (Hazards Ratio (HR) 1.15; 95% Confidence Interval (CI) 1.03, 1.30; p=0.018). Conversely, more patient-centered decision-making was associated with increased probability of early discontinuation (HR 1.29; CI 1.03, 1.63; p=0.028). All other associations were null. Conclusion: While unhurried communication was associated with initiation of hormone therapy, patient-centered decision-making was associated with early discontinuation. Different aspects of patient experience may have vastly different relationships with patient utilization of health services. Actionable assessments of patient experience may require measurement along multiple dimensions.

Implementation of QI coaching versus physician communication training for improving HPV vaccination in primary care: A randomized implementation trial

Grabert BK, Kurtzman R, Heisler-MacKinnon J, Leeman J, Bjork A, Alton Dailey S, Brewer NT, Gilkey MB

Presenter: Brigid Grabert, PhD, JD, MPH, Lineberger Comprehensive Cancer Center and University of North Carolina Gillings School of Global Public Health

Purpose of study: Health departments (HDs) are at the forefront of efforts to improve HPV vaccine uptake in the US. Most notably, HD staff routinely conduct in-person quality improvement (QI) coaching to help primary care clinics improve their vaccine delivery systems. Some HDs also engage outside experts to conduct remote physician communication training to help vaccine prescribers recommend HPV vaccine more effectively. To guide future HD programming, we sought to understand the implementation strengths and challenges of QI coaching and physician communication training. Methods: In a cluster randomized trial, we allocated 855 primary care clinics in 3 geographically-diverse US states to receive: 1) QI coaching; 2) physician communication training; or 3) both interventions combined. In each arm, we assessed adoption (or the % of clinics receiving the allocated intervention out of those invited), contacts per clinic (mean number of contacts needed to successfully schedule one clinic), reach (median number of total staff and prescriber participants per clinic), and delivery cost.

Results: More clinics adopted QI coaching than communication training or the combined intervention (63% vs 16% and 12%, both p<.05). Recruiting clinics into QI coaching sessions required fewer contacts than communication training or the combined intervention (mean = 4.7vs 29.0 and 40.4, both p<.05). In contrast, communication training and the combined intervention reached more total staff per clinic than QI coaching (median= 5 and 5 vs 2, both p<.05), including more prescribers per clinic (2 and 2 vs 0, both p<.05). QI coaching cost \$439 per clinic on average, including costs incurred from follow up (\$129/ clinic), session preparation (\$73/clinic), and travel (\$69/ clinic). Communication training cost \$1,287 per clinic, with most cost incurred from clinic recruitment (\$653/clinic). Conclusions: QI coaching was lower cost and had higher adoption, but remote communication training achieved higher reach, including to highly influential vaccine prescribers. Thus, communication training is a promising

intervention for improving HPV vaccine delivery, although care will be needed to overcome substantial challenges to clinic recruitment.

Recommending inequality? Patterns of US healthcare providers' HPV vaccine recommendations

Kong WY, Bustamante G, Margolis M, McRee AL, Pallotto IK, Gilkey MB

Presenter: Wei Yi Kong, MA, University of North Carolina at Chapel Hill

Purpose: Infrequent provider recommendations continue to be a key barrier to human papillomavirus (HPV) vaccination, including among adolescents at higher risk for future HPV cancers. To inform future provider- training programs, our study sought to synthesize the findings of existing studies of disparities in provider recommendation of HPV vaccination among adolescents. Methods: We conducted a systematic review of studies that quantitatively assessed the prevalence of provider recommendation of HPV vaccination among US parents of adolescents aged 9-17. We excluded studies that were not empirical, not peer-reviewed, or collected data before 2012. Following PRISMA guidelines, two independent coders extracted and screened 3,158 unique titles and abstracts from multiple databases. Next, two independent coders reviewed the full text of eligible studies, systematically collecting data using a standardized abstraction form. We resolved coding disagreements via discussion with the whole team. Results: Fifty-four of 252 reviewed studies met eligibility criteria, including 33 studies of parents and 21 studies of providers. Parental report of receiving a provider recommendation for HPV vaccination ranged from 22% to 78%. These studies most often assessed disparities by adolescents' sex, with almost all finding that provider recommendations were less common for boys vs. girls. Most studies of provider reports confirmed disparate recommendations by sex. Fewer studies stratified recommendation disparities by income or race/ethnicity; these studies found that recommendations were less common among lower-income households, but reported mixed findings by race/ethnicity. Geographic assessments found variation across states and urbanicity, with recommendations being lower including in some Southern states and in rural areas. Conclusion: Findings suggest differences in provider recommendation by sex, household income, geography, and possibly race/ethnicity, in spite of national guidelines for routine HPV vaccination. National efforts to improve provider communication about HPV vaccination should focus on improving recommendation consistency, especially for populations such as lower-income and rural adolescents who are at higher risk for future HPV cancers.

A prospective pilot study of lung cancer screening in patients at high risk for lung cancer who do not meet current screening guidelines

Hirsch EA, Brown SL, New ML, Malkoski SP

Presenter: Erin Hirsch, MSPH, MSCS, University of Colorado Anschutz Medical Campus

Purpose: To describe the results of a lung cancer screening (LCS) study of high-risk individuals ineligible for screening by Medicare (CMS) guidelines and prospectively selected by 6-year risk score. Methods: Study inclusion criteria included individuals 40-82 years old, with a 6-yr risk score of $\ge 1.5\%$ for <77 years or age or >4% for 78-82 years of age, calculated by the PLCOm2012 model, no symptoms of lung cancer, and willingness to sign a consent form. Enrollment was offered to eligible individuals referred for screening through the University of Colorado Hospital LCS program that did not meet CMS screening guidelines (55-77 years old, ≥30 pack year smoking history, current smoker or quit within the past 15 years). Enrolled participants completed a shared design making visit with a LCS clinic provider, underwent a LDCT read in Lung-RADs (LR) by thoracic radiologists, and received follow-up and additional referrals, if indicated, from the LCS clinic. Individuals could undergo up to 3 LDCTs as part of the study. Results: The study completed 66 LDCTs on 48 participants. Screened individuals were 52% male, 85% white, 52% former smokers, had a mean baseline age of $69(\pm 9)$ years, and a mean 6-year risk score of $5.6\%(\pm 5.9\%)$. LR results of the index LDCTs included 46% LRs 1, 44% LRs 2, 4% LRs 3, and 6% LRs 4. 35% of screened participants had a significant incidental finding; 59% were coronary calcifications. Reasons screened individuals were ineligible by CMS guidelines included: 12% <55 years, 21% >77 years, 27% <30 pack year smoking history, and 40% quit smoking >15 years prior. The study diagnosed two lung cancers, a stage 1A adenocarcinoma diagnosed in 74 yr old white female with a 3.3% 6-yr risk score and a carcinoid diagnosed in a 77 yr old white male with a risk score of 7.5%. Both individuals had quit smoking >15 years prior. Conclusions: Early stage lung cancers can be detected in asymptomatic individuals who are prospectively selected by risk calculators and fall outside current CMS guidelines. However, the two cancers were diagnosed in people that would not qualify for the proposed expanded US Preventive Service Task Force guidelines, lowering eligibility to 50 years of age and tobacco exposure to 20 pack years.

Paper Session: Impact of COVID-19 through the Cancer Continuum

Social Support and Mental Health during the COVID19-pandemic among cancer survivors: an analysis of the COVID Impact Survey

Islam JY, Vidot DC, Camacho-Rivera M

Presenter: Jessica Islam, PhD, MPH, UNC Lineberger Comprehensive Cancer Center

Introduction: The COVID-19 pandemic has affected the mental health of adults in the United States (U.S.) due to recommended preventive behaviors such as social distancing. Our objective was to evaluate mental health symptoms and determinants of mental health symptoms among cancer survivors during the COVID-19 pandemic in the U.S. Methods: We used nationally-representative data of 10,760 U.S. adults from the COVID-19 Impact Survey. We defined cancer survivors as a self-reported diagnosis of cancer (n=854, 7.6%). We estimated the association of mental health symptoms among cancer survivors using multinomial logistic regression and calculated adjusted odds ratios (aOR) and 95% confidence intervals (95% CI). We estimated determinants of experiencing at least one mental health symptom 3-7 times in the last seven days among cancer survivors using Poisson regression models to estimated adjusted prevalence ratios (aPR) and 95% CI. Results: Most cancer survivors were over the age of 60 (65%), NH-White (74%), female (52%), and married or living with a partner (57%). Among cancer survivors who spoke to their neighbors basically every day prior to the start of the COVID-19 pandemic, 62% continued this behavior, and 34% reported to speak to their neighbors only a few times a week in the last month. Among cancer survivors, 16% felt depressed, 14% felt lonely, and 13% felt hopeless about the future in the last seven days. Cancer survivors were more likely to report feeling nervous, anxious or on edge (aOR:1.42, 95% CI: 1,07-1.90), depressed (aOR:1.69, 95% CI:1.28-2.24), lonely (aOR:1.47, 95% CI:1.09-1.98), and hopeless (aOR:1.55, 95% CI:1.14-2.10) 3-7 days per week in the last seven days when compared to adults without cancer. Among cancer survivors, adults aged 30-44 years (aPR: 1.87, 95% CI:1.18-2.95), females (aPR:1.55, 95% CI:1.12-2.13), without a high school degree (aOR: 1.79, 95% CI; 1.05-3.04), and adults with limited social interaction (aPR:1.40, 95% CI:1.01-1.95) were more likely to experience mental health symptoms 3-7 days/week in the last week. Conclusions: Cancer survivors are experiencing mental health symptoms during the COVID-19 pandemic, particularly young adults, adults without a high school degree, females, and survivors with limited social support.

Voices of Community Organizations: How cancer centers can support communities in the face of COVID-19

Austin JD, Lee E, Shelton RC, Hillyer G, Schmitt K, Tehranifar P.

Presenter: Jessica Austin, PhD, MPH, Columbia Mailman School of Public Health

Purpose: As part of an ongoing effort to support the equitable delivery of cancer care to historically underserved communities in New York City (NYC), we examined the impact of COVID-19 on community outreach organizations working with an NCI-comprehensive cancer center Methods: We conducted 16 semi-structured interviews (30-90 minutes; July-September 2020) with stakeholders (SH) including patient navigators, patient advocates, faith-based leaders, community health, and non-profit organizations in NYC the epicenter of the COVID-19 pandemic in the US. Using thematic analysis, we characterized experiences and challenges in supporting cancer care delivery during COVID-19. Results: Per SH, COVID-19 required organizations to shift priorities to address day-to-day needs exacerbated by COVID-19 (food insecurity, financial/housing instability, misinformation, emotional distress). Organizations adapted by leveraging existing partnerships, including the cancer center, and partnering with new local/state organizations to broaden their work scope (e.g., COVID-19 testing centers, food pantries, technology training), and disseminate reliable COVID-19 information to communities. All organizations transitioned to virtual platforms creating challenges for those with limited technical resources and often excluded older or isolated populations; thus, many organizations retained a socially distanced in-person component to remain visible and trustworthy within the community. Importantly, SH emphasized the importance of cancer center support via proactive involvement and communication with community members, providing a supportive infrastructure (funding, technical support, personnel), and incorporating community voices into new programs and projects during and beyond the COVID-19 pandemic. Conclusion: In addition to or in lieu of cancer care delivery efforts, community organizations are compelled to develop innovative approaches that address the more immediate needs of the community resulting from COVID-19. Cancer centers can support their community partners by being responsive and flexible to the community needs, building trust within the community, and strengthening community organizational capacity to reduce the longterm damage of COVID-19 and achieve equity.

Financial and Employment Impacts of Cancer and COVID-19 Among African American Cancer Survivors

Hastert TA, Ruterbusch JJ, Best AL, Harper FWK, Thompson H, Beebe-Dimmer JL, Schwartz AG

Presenter: Theresa Hastert, PhD, MPP, Wayne State University/Karmanos Cancer Institute

Purpose: Financial hardship due to cancer is more common among African American than White survivors. The COVID-19 pandemic and its economic fallout have also disproportionately affected African Americans. The purpose of this study is to describe the financial and employment impacts of COVID-19 in a population of African American cancer survivors and to compare those impacts with those experienced after a cancer diagnosis. Methods: Results include survey data from 593 participants in the population-based Detroit Research on Cancer Survivors (ROCS) cohort who completed the ROCS enrollment survey and a supplemental questionnaire related to the impact of the COVID-19 pandemic on their financial wellbeing and employment. Most participants (96%) were not diagnosed with COVID-19 by the time they completed the supplement and reflect the societal impact of the pandemic rather than a personal COVID-19 diagnosis. Analyses compare reports of financial hardship (using assets, borrowing money, experiencing debt, decreases in income) and employment impacts (changes to work schedules, duties, hours, employment status) due to cancer and due to the COVID-19 pandemic. Results: A similar proportion of ROCS participants reported financial hardship (41% vs. 42%) and borrowing money (5% vs. 6%) related to the COVID pandemic and their cancer diagnosis, respectively. Fewer survivors reported borrowing money (9% vs. 17%; p<0.001) or experiencing a decrease in income due to COVID than cancer (20% vs. 28%; p=0.001); however; more reported debt associated with COVID (30% vs. 17%; p<0.001). Changes to work schedules (44% vs. 36%) and hours worked (44% vs. 28%) related to the COVID pandemic and cancer were common, and not statistically different from one another. More survivors changed their work duties due to the COVID pandemic (20%) than cancer (12%; p=0.048). Prevalence of changes to employment status were similar for cancer (6%) and COVID (11%). Conclusions: The COVID-19 pandemic was associated with similar levels of overall financial hardship, and higher prevalence of debt and some work changes, than individual cancer experiences. These additional burdens on a financially vulnerable population could exacerbate existing cancer-related inequities.

Impact of COVID-19 pandemic on healthcare delivery, behavioral outcomes, and financial stress in 1,253 individuals with cancer at Huntsman Cancer Institute (HCI)

Peoples AR, Himbert C, Hathaway CA, Kirchhoff AC, Ose J, Lin T, Colman H, Jones KB, Akerley WL, Grossman D, Hunt JP, Penedo FJ, Siegel EM, Ulrich CM, Tworoger SS

Presenter: Anita Peoples, PhD, MPH, Huntsman Cancer Institute, University of Utah

Purpose: The COVID-19 pandemic has substantially changed social practices, economic stability, and access to medical care that may significantly affect cancer patients, especially those undergoing active treatment. We characterized the pandemic's influence on healthcare delivery, behavioral health, and financial stress in cancer patients. Methods: We included data from N=1,253 adult cancer patients, who visited HCI in the last 4 years, consented to the Total Cancer Care study, and completed a COVID-19 survey as part of the COPES consortium. The survey was administered between Aug and Sept 2020 and included questions on change/cancellation of medical visits, change in exercise and alcohol consumption, daily life, social interactions, and financial stress since March 2020. Results: The cohort's mean age was 60.4 (19-92) years, with 54% female, 68% non-Hispanic White, 41% retired, 43% employed full or part-time, and 24% living in rural counties. Among the 27% of patients who reported receiving current treatment at HCI, 30% had to change or cancel a medical visit due to the pandemic, with 2% reported a change/cancellation in a biopsy, surgery, radiotherapy, and chemotherapy; 5% reported a change/ cancellation in imaging; and 3% and 23% reported a change/ cancellation in cancer screening and doctor's visit, respectively. 18% rescheduled an appointment to a telehealth visit. Changes in exercise habits due to the pandemic were common (47%), with 10% no longer exercising regularly, 21% exercising less, and 11% exercising more than before. 5% reported increased alcohol consumption, while 6% reported a decrease. Most patients (84%) experienced a change in their daily lives (ranging from somewhat to a lot of change). 69% had fewer social interactions, and 49% reported financial stress due to the pandemic, with 11% reporting being quite a bit/very much financially stressed. Conclusions: These findings suggest that within approximately the first 6 months, the COVID-19 pandemic had a substantial impact on cancer patients' lives, with adverse effects on health behaviors and financial stress. Healthcare delivery continued for essential cancer care but was disrupted for other services, such as cancer screening. Further analyses are underway. Funding: U01CA206110 and R01CA211705.

Paper Session: Lifecourse Exposures & Cancer

Historical housing discrimination, indicators of disinvestment, and breast cancer outcomes nearly a century later

Plascak JJ, Roy J, Stroup AM, Beyer K, Rundle AG, Mooney SJ, Jacob G, Llanos AAM

Presenter: Jesse Plascak, PhD, The Ohio State University

Purpose: We investigated associations between 1930's era records of mortgage lending discrimination (i.e., "redlining"), a present-day indicator of disinvestment (i.e., residential physical disorder), and tumor clinicopathologic features (stage, grade, subtype) and survival among women diagnosed with breast cancer in New Jersey. Methods: Historical, Home Owners' Loan Corporation (HOLC) data were recently geocoded from the University of Richmond's Digital Scholarship Lab. Risk grades of 'A'/'Best', 'B'/'Still Desirable', 'C'/'Definitely Declining', and 'D'/'Hazardous' - available for six metropolitan areas of New Jersey - were collapsed into C/D ('redlined') and A/B ('not redlined') for analyses. Sociodemographics (age, race, ethnicity, geocoded residential address, date of diagnosis), tumor features (stage at diagnosis, grade, subtype), and vital status (cause and date of death) were ascertained from the New Jersey State Cancer Registry for all primary, histologically-confirmed, invasive breast cancer cases diagnosed between 2008 and 2017, among female residents of a HOLC-graded area, who were ≥ 20 years at diagnosis (N=11,980). Residential physical disorder was estimated based on residential address at diagnosis using spatial prediction models of virtually audited Google Street View scenes of 6,132 locations. Logistic regression models of tumor features and accelerated failure time models of survival time to BrCa-specific death (follow-up through 2019) were built to investigate associations with redlining and physical disorder, while controlling for covariates. Results: There were 1,215 BrCa-specific deaths, a median follow-up time of 5.1 years, and a 5-year survival of 89.6%. Living in a historically redlined neighborhood was associated with higher odds of late-stage and high-grade tumors. Living in a non-redlined neighborhood was associated with a 47.5% (95% CI: 20.1, 79.8) longer survival time in low physical disorder areas. This survival benefit decreased as physical disorder increased. Conclusions: Historical racial housing discrimination might interact with present-day measures of disinvestment to influence BrCa survival. Future studies should collect more comprehensive data including potential confounders and residential history.

Residential proximity to dioxin-emitting facilities and risk of non-Hodgkin lymphoma in the NIH-AARP Diet and Health Study

Jones RR, Ward MH, Deziel NC, Medgyesi DN, Pronk A, Nuckols JR, Fisher JA

Presenter: Rena Jones, PhD, MS, National Cancer Institute

Purpose: Few studies have investigated the relationship between risk of non-Hodgkin lymphoma (NHL) and residential proximity to polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/F) emitted from industrial combustion and manufacturing sources. Methods: We evaluated this relationship among participants of the NIH-AARP Diet and Health Study, a prospective cohort (N=548,845) in 6 states and 2 cities in the U.S. We linked geocoded enrollment addresses (1995-1996) with a U.S. Environmental Protection Agency database of 4,478 historical PCDD/F sources, which contained toxic equivalency quotient (TEQ) emissions estimates from 1995. Exposure metrics indicated presence/absence of any facility within 3 and 5km of participant homes, overall and by type of facility (e.g., coal-fired power plants, waste incinerators), which vary in emissions levels and constituency. We also calculated exposure as a distance- and toxicity-weighted average emissions index (AEI [g TEQ]). We used Cox regression to estimate associations (hazard ratios; HR and 95% confidence intervals; CI) with NHL and major subtypes, adjusting for and by strata of sociodemographic and lifestyle characteristics. Results: With 6,747 incident cases through 2011, we found no association between living near any or specific types of PCDD/F-emitting facilities and NHL risk. However, participants with an AEI >95th percentile within 5km had increased risk of NHL compared to unexposed (HR=1.28;CI=1.05-1.55;p-trend=0.01). Specifically, we observed increased risk for lymphoplasmacytic lymphoma (HR=2.98,CI=1.16-7.63;p-trend=0.03) and diffuse large B-cell lymphoma (HR=1.65,CI=1.11-2.46;ptrend=0.01). Non-Hispanic blacks were nearly three times as likely as whites to live <5km of a facility, although we had limited power to evaluate heterogeneity in associations by race/ethnicity. Associations did not vary by age, smoking status, body mass index, or urbanicity of residence. Conclusions: Using an exposure metric accounting for distance and the toxicity of emissions, we found significant positive associations between residential exposure to high PCDD/F emissions and risk of NHL and two subtypes. Our results underscore the hazard for populations living near sources of these persistent organic pollutants.

Physical activity from adolescence through midlife and associations with obesity and endometrial cancer risk

Saint-Maurice PF, Sampson JN, Michels KA, Moore SC, Loft-field E, McClain K, Cook MB, Trabert B, Matthews CE

Presenter: Pedro Saint-Maurice, PhD, National Cancer Institute

Purpose: This study sought to describe the physical activity-endometrial cancer association and potential mediation of this relationship by obesity in midlife. Methods: Participants were 67,705 women (aged 50-71 years) enrolled in the NIH-AARP cohort who reported their historical leisure-time physical activity patterns starting at age 15–18 years. We identified five long-term physical activity patterns between adolescence and cohort entry (i.e., inactive, maintained-low, maintained-high, increasers, decreasers). We used Cox regression (Hazard ratio - HR [95% CI]) to assess the relationship between these patterns and midlife obesity and endometrial cancer, adjusting for covariates. Mediation analysis was used to decompose the physical activity patterns-endometrial cancer association to estimate the proportion of the physical activity-endometrial cancer association mediated by midlife obesity. Results: During an average 12.3 years of follow-up 1,468 endometrial cancers occurred. Long-term physical activity patterns were inactive, maintained-low, maintained-high, increasers, and decreasers. Compared to long- term inactive women, women who maintained-high or increased activity levels had a 19-26% lower risk for endometrial cancer (maintained-high: HR=0.81 [0.67, 0.98]; increasers: HR=0.74 [0.61, 0.91]). They also had a 45-77% lower risk for obesity in midlife (e.g., maintained-high, BMI 30-39.9: HR=0.50 [0.46, 0.55]; maintained- high, BMI 40+: HR=0.32 [0.26, 0.39]). Obesity was a significant mediator and appeared to account for 55-63% of the physical activity-endometrial cancer associations observed. Conclusions: Both initiating and maintaining physical activity throughout adulthood can play a role in preventing obesity and in turn, lowering the risk for endometrial cancer.

Hair Product Use and Ovarian Cancer Risk

White AJ, Sandler DP, O'Brien KM

Presenter: Alexandra White, PhD MSPH, National Institute of Environmental Health Sciences

Purpose. We evaluated whether hair products, including many known to contain carcinogens and endocrine disrupting chemicals, are related to incident ovarian cancer in a large prospective cohort. Methods. After excluding women with a history of ovarian cancer or bilateral oophorectomy, 40,559 Sister Study participants were included. Participants were aged 35-74 and had a sister with breast cancer but no history of breast cancer themselves at enrollment in 2003-2009. Participants completed questionnaires on frequency of hair product use (including hair dyes, straighteners/ relaxers and hair permanents/body waves) in the 12 months prior to enrollment. Cox regression models were used to estimate adjusted hazard ratios (HRs) and 95% Confidence Intervals (CIs) for the association between hair product type and frequency of use in relation to incident ovarian cancer. We also assessed models stratified by tumor type (serous, non-serous). Results. After a mean of 10 years of follow-up, 241 women had self-reported an incident ovarian cancer diagnosis. Ever use of hair products in the past year (including permanent, semi-permanent and temporary hair dyes, straighteners/relaxers, and hair permanents/body waves) was not associated with a higher risk of ovarian cancer. However, frequent use (>4 times) of straighteners/relaxers in the past year was positively associated with ovarian cancer (HR=2.45, 95% CI: 1.27-4.73). This association was stronger for non-serous (HR=4.25, 95% CI: 1.07-16.9) compared to serous (HR=1.38, 95% CI:0.47-4.04) ovarian cancers. Ever use of permanent hair dye was positively associated with non-serous (HR=1.91, 95% CI 1.10-3.33), but inversely associated with serous (HR=0.65, 95% CI: 0.43-0.98) ovarian cancer (p-for-heterogeneity=0.002). Conclusion. These results suggest that frequent use of hair straighteners/relaxers and possibly permanent hair dye may be positively associated with the occurrence of non-serous ovarian cancers.

Paper Session: New Findings in Cancer Survivorship Research

Feasibility of a group-based telehealth psychosocial intervention for women with Non-Small Cell Lung Cancer (NSCLC)

Kroll JL Higgins H Snyder S Chen A Antonoff M Li Y Tsao A Milbury K

Presenter: Juliet Kroll, PhD, The University of Texas MD Anderson Cancer Center

Purpose of study: As women with lung cancer are particularly vulnerable to psychological distress and social isolation, which may be further exacerbated by current COVID-19 physical distancing precautions, we examined the feasibility and acceptability of a group-based telehealth psychosocial intervention for this understudied patient population. Methods: Women with a recent diagnosis (3 months) of non based telehealth psychosocial intervention for this understudied patient population. Methods: Women with a recent diagnosis (3 months) of non-small cell lung cancer (NSCLC) currently undergoing treatment completed baseline measures of computer literacy and were randomized to a group-based telehealth psychosocial intervention consisting of ether coping skills or attention control (AC) psychoeducation. Both arms consisted of five, 60 min. telehealth (video conference over Zoom) sessions. Groups were comprised of 3-5 members and led by a masters-level clinician. Participants completed one "practice run" with technology prior to starting the group session. After the final session, patients rated overall experience of intervention delivery and telehealth platform. Results: Seventy patients (mean age=66 yrs, 54% >65 yrs; 71% non-Hispanic White; 50% college educated; 75% advanced stage) consented (63% consent rate) and 65 were randomized to intervention or AC. At baseline, 47% of patients indicated daily computer use while 50% said they rarely or never use a computer. Attendance was high in both arms with 63% of patients attending all sessions (means: intervention=3.18; AC=3.56). Across arms, 89% preferred group delivery and 92% preferred online delivery. The majority used a smartphone or tablet to participate (72%). Regarding the Zoom platform, 71% said it was easy to use, 65% would recommend it to others, and 41% felt comfortable with it after one use. Only 44% thought that telehealth was the same as it would have been in-person. Conclusions: The present findings suggest the feasibility and acceptability of delivering a group-based psychosocial intervention via telehealth for middle to older aged women with NSCLC undergoing treatment, which may be particularly beneficial to address isolation during the current season of physical distancing.

Multilevel Risk Factors for Weight Change after Breast Cancer Diagnosis Among Black Women

Kim K, Bandera EV, Xu B, Chanumolu D, Rundle AG, Hurvitz PM, Ambrosone CB, Demissie K, Hong CC, Lovasi GS, Qin B

Presenter: Bo Qin, Ph.D., Rutgers Cancer Institute of New Jersey

Background: Weight gain after breast cancer diagnosis increases the risk of mortality. African American/Black breast cancer survivors are more likely to have excess body weight than their White counterparts, which may contribute to their higher mortality rate. Emerging evidence suggests that post-diagnosis weight gain may result from multilevel determinants. However, no study has investigated the multilevel characteristics among Black breast cancer survivors. Objective: To evaluate associations between individual-level factors and neighborhood social and built environment factors with weight change after breast cancer diagnosis among Black women. Methods: We evaluated associations of interest among 785 women enrolled in the Women's Circle of Health Follow-Up Study (WCHFS), a longitudinal study of Black breast cancer survivors in New Jersey. Weight change was primarily based on measurements at baseline and follow-up visits (Median: 10.3 and 23.2 mo. since diagnosis, respectively). Participants were grouped into categories of stable weight (52.4%), \geq 3% weight loss (20.0%), and \geq 3% weight gain (27.6%). Using multivariate- adjusted multinomial logistic regression and multilevel multinomial logistic regression, we evaluated relative risk ratios (RRRs) for associations between multilevel factors and post-diagnosis weight change category. Results: Black breast cancer survivors who were older at diagnosis, had higher household income, post-menopausal status, and higher baseline BMI were less likely to gain weight compared to women with stable weight. Former smoking, higher tumor stage, and chemotherapy were associated with increased relative risk of weight gain (e.g. RRR-chemo: 1.45, 95% CI: 1.01, 2.08). Black women residing in neighborhoods in the highest tertile for density of walkable destinations had a decreased relative risk of post- diagnosis weight gain (e.g. RRR-T3 highest density vs. T1 lowest: 0.39, 95% CI: 0.20, 0.75), while those residing in neighborhoods with higher density of fast food restaurants had increased relative risk of weight gain (RRR-T3 highest density vs. T1 lowest: 1.94, 95% CI: 1.23, 3.05). Conclusion: Both individual and neighborhood factors may influence the risk of weight gain among Black women after breast cancer diagnosis.

Circulating Inflammatory Proteins Associated with Dementia Risk in Older Adult Cancer Survivors in the Atherosclerosis Risk in Communities (ARIC) Study

Ugoji CC, Walker KA, Dean LT, Gross AL, Ballantyne CM, Butler K, Hoogeveen RC, Joshu C, Mosley TH, Prizment A, Sharrett AR, Tin A, Coresh J, Platz EA

Presenter: Chinenye Ugoji, BPharm, MPH, Johns Hopkins University

Background Inflammation is linked to cognitive impairment(CI) in cancer survivors. But its role in survivors who develop dementia is unclear. Methods We evaluated dementia risk per log2 increase in 580 inflammatory proteins in 391 dementia-free long-term (>5 yrs) older adult survivors of prostate, breast, colorectal, endometrial and bladder cancers in ARIC. Plasma inflammatory proteins were measured at visit 5(2011-13) using SomaScan, an aptamer-based assay. Participants were followed through visit 6(2016-17). We adjusted for age, sex, race, years since cancer diagnosis, ApoE4, renal function, anti-inflammatory drug use and cancer/CVD shared risk factors. We also investigated proteins associated with dementia in 196 prostate and 135 breast cancer survivors, accounting for multiple testing by Bonferroni correction and false discovery rate Q-values. Results Survivors were 20% Black, 54% male, mean age of 76yrs, median time since diagnosis of 12yrs. 67 dementia cases occurred in 1780 person-yrs. After FDR correction, 73 proteins were statistically significantly associated with dementia risk. TMEM87B, CD9, RAF1, IL21sR and FGF7 showed the strongest positive association, with HR:3.4-3.8 per ∆log2. LAIR1, IL36B, FGFR3, FLRT3 and LSAMP showed the strongest inverse association, HR:0.1-0.2. Only syntaxin12 (STX12) was significant after Bonferroni correction, HR:2.2. Associations of some inflammatory proteins with dementia were cancer site-specific. In breast cancer survivors, IL6, HMGA2, IFN-GR1, SAP, TNFRSF1a, TNFRSF14, and TNFAIP3, were associated with dementia. STX12 and RAF1 were significantly associated(q<0.05) with dementia in all, prostate, and breast cancer survivors. Conclusion Inflammatory proteins were associated with dementia in older adult cancer survivors, including STX12 (enriched in brain, linked to WNT signaling loss, exerts CNS effects) and RAF1 (regulates MAPK/ ERK pathway, previously identified in dementia etiology). Inflammatory proteins previously associated with CI, including TNF proteins/receptors, were associated with dementia in breast cancer survivors. If confirmed, these proteins may warrant evaluation as potential biomarkers for dementia risk screening, and possibly preventive/therapeutic targets in cancer survivors. Funding: NHLBI,NCI,NPCR

Ethnic disparities in methotrexate neurotoxicity among children and adolescents with acute lymphoblastic leukemia

Scheurer ME, Brown AL, Taylor OA, Bernhardt MB, Dreyer ZA, Brackett J, Mitby PA, Hooke MC, Moore IM, Hockenberry MJ, Rabin KR, Lupo PJ

Presenter: Michael Scheurer, PhD, MPH, Baylor College of Medicine

Purpose of study: To identify factors related to the increased risk of neurotoxicity in children with acute lymphoblastic leukemia (ALL) after treatment with the antifolate agent methotrexate (MTX), a critical component of curative protocols. Methods: We analyzed the incidence of and factors associated with acute MTX neurotoxicity (neurologic episode within 14d of dose that resulted in treatment modification) in a multi-site study of 280 (48% Latino) newly diagnosed (between 2012-2017) patients treated on recent pediatric ALL protocols. We examined the effects of genetic ancestry and single nucleotide variants in a subset of 190 patients with genotype data. Results: MTX neurotoxicity occurred in 22% of Latino compared to 7% of non- Latino patients; a nearly 2.5-fold increased risk after accounting for other clinical and demographic factors. Patients with neurotoxicity received fewer total MTX doses, and their risk for relapse was 2-fold higher than patients who did not experience neurotoxicity. We also found that 42% of our Latino patients who experienced a first neurotoxic event went on to have additional events, compared to only 21% of non-Latino patients. The proportion of genetic variation that co-segregates with Native American ancestry was overrepresented in individuals with MTX-related neurotoxicity (mean=35%) vs without neurotoxicity (mean=23%, p=0.025). In multivariable models accounting for sex, age at diagnosis, and treatment risk group, every 10% increase in the proportion of Native American genetic ancestry was associated with a 16% increase in neurotoxicity incidence (HR=1.16; 95% CI: 1.02-1.32). Our data also suggest that Latinos are at higher risk for first (OR=3.51, p=0.02) and subsequent (OR=6.10, p=0.04) neurotoxic events associated with a missense variant in TCF12, which is more common in admixed Latino (23%) compared to European (3%) or African (<1%) populations. Conclusions: MTX neurotoxicity is more common among Latino children and adolescents with ALL, compromises treatment efficacy, and may contribute to disparities in ALL relapse and survival. Our findings to date highlight that differences in inherited genetic variation, which segregate with ancestry, likely contribute to disparities in the incidence of treatment-related neurotoxicity.

TWITTER CONFERENCE



At their scheduled time authors will present their research in 5 tweets and will answer questions. Follow along with **#ASPOposters2021**

TUESDAY, MARCH 30			
Mirzya Haider	@_mirzya	11:00 AM	Investigating Differences in Cancer Survival Among South Asian Ameri- cans: A Prospective Cohort Study from the Surveillance, Epidemiology and End Results (SEER) Program, 2001-2015
Rebecca Kehm	@KehmRebecca	11:03 AM	Adolescent physical activity and breast cancer risk before age 50 years: findings from the Prospective Family Study Cohort (ProF-SC)
Timothy Shu	@shu_box	11:06 AM	Discerning patterns of death among bladder cancer patients across race and sex: A population-based database analysis
Kerri-Anne Mitchell	@drkmitchellpark	11:09 AM	Patient-Centered Factors Associated with Chemotherapy Communication in African-American and White Breast Cancer Patients
Maeve Bailey-Whyte (Kiely)	@maeve_kiely	11:12 AM	High urinary thromboxane B2 associates with lethal prostate cancer in African American men and inversely correlates with aspirin use.
Elizabeth Arthur	@OncScienceNurse	11:15 AM	Breast Cancer Surgery Experiences and Outcomes in Sex and Gender Minority Individuals: A Systematic Review
Grace Hillyer	@HillyerGrace	11:18 AM	E-cigarette use and future health of our youth: Results of a communi- ty-based cancer needs assessment
Marni Granzow	@Granzow3	11:21 AM	Identifying associations with cancer screening among women in rural, segregated communities
Siobhan Phillips	@smphillips19	11:24 AM	Fit2Thrive: Optimization of a mHealth Physical Activity Promotion Intervention for Breast Cancer Survivors
Rachel Meadows	@RachelJMeadows	11:27 AM	Predicting breast cancer risk in a community-based sample of high-risk survey respondents
Gabriela Bustamante	@PerezDetodogaby	11:30 AM	"After having it annually for so long, I would be anxious about now waiting so long": Women's Perceptions and Preferences Related to Cervical Can- cer Screening
Meghan Tipre	@TipreMeghan	11:33 AM	Adaptation to Digital Data Collection for Prostate Cancer Research during Covid-19 in Rural Alabama
Elizabeth Salerno	@DrLizSalerno	11:36 AM	Effects of a DVD-delivered physical activity intervention on functional performance in cancer survivors
Lindsay Collin	@lindsayjane530	11:39 AM	New perspectives on racial disparities in breast cancer mortality through the quality of care
Perla Vaca Lopez	@PerlaVacaL	11:42 AM	The HIAYA CHAT Project: Qualitative Feedback on a Health Insurance Edu- cation Program for Adolescent and Young Adult Cancer Patients
John Anderson	@johna3877	11:45 AM	The HIAYA CHAT project: Incorporating Pilot Testing Data in the Refine- ment of a Health Insurance Education Program for Adolescent and Young Adult Cancer Patients
Holly Harris	@bluelobsta	11:48 AM	Estimation of contributing factors to racial disparities in epithelial ovarian cancer survival
Samuel Washington	@SamWashUro	11:51 AM	Longitudinal Analysis of the Indirect Burden of Prostate Cancer Manage- ment on Paid and Unpaid Work: Data from Capsure
Jennifer McElfresh	@J70795719	11:54 AM	Exploring the Influence of Spirituality on the HRQoL and Loneliness in Hispanic Caregivers of Latinas with Breast Cancer

WEDNESDAY, MARCH 31			
Emily Haines	@EmilyRHaines	11:00 AM	An actionable needs assessment for adolescents and young adults with cancer: the AYA Needs Assessment & Service Bridge (NA-SB)
Nicole Niehoff	@nikkiniehoff	11:03 AM	Airborne metals, polycyclic aromatic hydrocarbons and terminal duct lobular involution of the normal breast
Weichuan Dong	@weichuandong	11:06 AM	Improvements in Geospatial Disparity of Breast Cancer Stage at Diagnosis under Medicaid Expansion in Ohio, A Space-Time Cluster Analysis
Jacqueline B. Vo	@JacBVo	11:09 AM	Trends in heart disease mortality among US breast cancer survivors, from 1975-2017
Megan Mullins	@mamullins	11:12 AM	Racial differences in continuity of care and aggressive end-of-life care among women drying with ovarian cancer in SEER-Medicare
Eduardo Quinonez Zanabria	@QuinonezMed	11:15 AM	Racial and Ethnic Disparities in Preoperative Wait Time for Renal Cell Carcinoma Treatment
Erika Biederman	@BiedermanErika	11:18 AM	Characteristics of Home-Based Self-Sampling for Human Papillomavirus (HPV) Among Low-Income Women Using Conjoint Analysis
Allyson Gregoire	@AllyGregoire	11:21 AM	Ultraviolet radiation and breast cancer risk in a large prospective cohort
Margaret Raber	@RaberRamsey	11:24 AM	Cancer-related Nutrition and Meal Planning Content on Pinterest
Scherezade Mama	@schermama	11:27 AM	Impact of COVID-19 posttraumatic stress on psychosocial distress in rural cancer survivors
Lubna Hossain	@HossainMendoza	11:30 AM	Cancer Prevention Research During a Pandemic: The Impact of Social Media Advertising
Emily Dunston	@DunstonEmily	11:33 AM	Clinical and demographic factors associated with follow-up in a hospi- tal-based exercise oncology program
Austin Waters	@AustinH2O_	11:36 AM	A Qualitative Inquiry of Cancer Caregiving during Young Adulthood: Chal- lenges, Responsibilities, Social Support, and Teamwork
Prajakta Adsul	@PrajaktaAdsul	11:39 AM	Improving comprehensive cancer control state plans for colorectal cancer screening in the four-corners region of the United States
Briana Chronister	@BrianaNCortez	11:42 AM	Dietary acid load, serum polychlorinated biphenyl (PCB) levels, and mortality following breast cancer in the Long Island Breast Cancer Study Project
Echo Warner	@warnerecho	11:45 AM	The HIAYA CHAT project: Utilizing an intervention adaptation framework to inform a health insurance education program for adolescent and young adult cancer patients
Anthony Rossi	@UAZBCBotanicals	11:48 AM	Use of Dietary Supplements by Breast Cancer Survivors
Eduardo Santiago-Ro- driguez	@edusan218	11:51 AM	Colorectal cancer screening adherence and racial/ethnic inequalities among the foreign-born associated with time living in the U.S.

THURSDAY, APRIL 1			
Heather Ochs-Bal- com	@hmbalcom	11:00 AM	Novel breast cancer susceptibility identified in African ancestry consortia under linkage peaks
Marina Sweeney	@piperific	11:03 AM	Outdoor light at night and terminal duct lobular unit involution in the normal breast
Xiaochen Zhang	@zxchstar	11:06 AM	Lower-extremity lymphedema, physical functioning, and activities of daily living in the WHI LILAC survivorship cohort
Jessica Islam	@jessicayislam	11:09 AM	Health Care Access Measures Associated with Palliative Care Use Among Gynecological Cancer Patients: an analysis of the 2016 National Cancer Database
John Charles Lacson	@DrCharlesLacson	11:12 AM	Randomized trial of precision prevention materials to improve short-term primary skin cancer prevention activities among Hispanics

Susan Buckenmaier	@ssb214	11:15 AM	Examination of PSA screening in military and civilian men: Analysis of the 2018 Behavioral Risk Factor Surveillance System to characterize shared decision-making and screening uptake
Linda Fleisher	@GMAP_R4	11:18 AM	2020 Impact on Research Productivity Survey: The Geographic Manage- ment of Cancer Health Disparities Program (GMaP)
Margaret Raber	@RaberRamsey	11:21 AM	Initial reactions to a low-touch digital weight loss pilot intervention across 4 diverse cohorts.
Gabriela Bustamante	@PerezDetodogaby	11:24 AM	Racial and ethnic differences in breast and cervical cancer screening among uninsured low-income women in Minnesota
Lesley-Ann Mill- er-Wilson	@LesleyAnnMille2	11:27 AM	Evaluating outreach methods for the multi-target stool DNA test for col- orectal cancer screening among a screening-eligible employer population
Heydon Kaddas	@hkkaddas	11:30 AM	Differences in HPV vaccination rates between pediatric, adolescent, and young adult (AYA) cancer survivors and a non-cancer comparison sample
Austin Waters	@AustinH2O_	11:33 AM	AYA Cancer Patients' and Survivors' Employment Changes during the COVID-19 Pandemic are Associated with High Financial Toxicity
Prajakta Adsul	@PrajaktaAdsul	11:36 AM	Implementation determinants for improving colorectal cancer screening among New Mexico's American Indian communities
Joemy Ramsay	@joemyramsay	11:39 AM	Missed Opportunities for HPV Vaccination among Childhood Cancer Survivors
Janet Chu	@janetnchu	11:42 AM	The Patient Cancer OUtreach, Navigation, Technology and Support (Pa- tient COUNTS) Project: Developing a virtual patient navigation program for Asian American cancer patients
Miria Kano	@MiriaKano	11:45 AM	Opportunities and Challenges for Creating Sexual and Gender Minority Cancer Health Equity: Patient and Caregiver Perspectives from a Qualita- tive Pilot Study
Osika Tripathi	@OsikaTripathi	11:48 AM	Cancer mortality among Asian American ethnicities, by nativity and etiology of cancer (2008-2017)
Rebecca Molsberry	@RJMolsberry	11:51 AM	Associations between breast cancer risk estimation and modifiable health behaviors in the Bright Pink Assess Your Risk population
Caitlin Murphy	@caitlincmurphy	11:54 AM	Gestational growth and risk of young-onset colorectal cancer

POSTER DIRECTORY

AUTHOR	POSTER TITLE	LINK
Anderson	Long-term patterns of excess mortality among endometrial cancer survivors	https://cdmcd.co/XGG3Mw
Anderson	The HIAYA CHAT project: Incorporating Pilot Testing Data in the Refinement of a Health Insurance Education Program for Adolescent and Young Adult Cancer Patients	https://cdmcd.co/J66rXY
Aquilina	Adverse Childhood Experiences and Adult Diet Quality	https://cdmcd.co/ybbWLd
Arjani	Lifetime BMI, central adiposity and pancreatic cancer risk in a large US cohort	https://cdmcd.co/G33Jkb
Arthur	Breast Cancer Surgery Experiences and Outcomes in Sex and Gender Minority Individuals: A Systematic Review	https://cdmcd.co/rMM7xj
Bail	Living with Metastatic Cancer in the Deep South amidst the COVID-19 Pandemic	https://cdmcd.co/KGG4Xj
Bauer	Distinct difference in DNA methylation pattern between breast cancer cases and non-cases in a prospective cohort pilot	https://cdmcd.co/gQQZdz
Begi	National Trends in Younger Onset Obesity-Related Cancer Incidence	https://cdmcd.co/7rrxDA
Bergeron	What social factors are most strongly associated with the reduced spread of breast can- cer cultural beliefs among African American women?	https://cdmcd.co/Mpp6Mq
Bevel	Cardiometabolic Risk Factors and Risk of Breast Cancer by Molecular Subtype: Case-Con- trol Study of the Mechanisms for Established and Novel Risk Factors for Breast Cancer in Nigerian Women (MEND) study	https://cdmcd.co/abbRMR
Biederman	Characteristics of Home-Based Self-Sampling for Human Papillomavirus (HPV) Among Low-Income Women Using Conjoint Analysis	https://cdmcd.co/E33Byw
Buckenmaier	Examination of PSA screening in military and civilian men: Analysis of the 2018 Behavioral Risk Factor Surveillance System to characterize shared decision-making and screening uptake	https://cdmcd.co/j99Xgz
Bucy	Physical Activity in Young BRCA Carriers and Reduced Risk of Breast Cancer	https://cdmcd.co/kggJ3r
Bustamante	Racial and ethnic differences in breast and cervical cancer screening among uninsured low-income women in Minnesota	https://cdmcd.co/bYYLw4
Bustamante	"After having it annually for so long, I would be anxious about now waiting so long": Women's Perceptions and Preferences Related to Cervical Cancer Screening	https://cdmcd.co/v99vwr
Camacho- Rivera	Disparities in Food Insecurity among Cancer Survivors during the U.S. COVID-19 Pandemic	https://cdmcd.co/YkkDQk
Chronister	Dietary acid load, serum polychlorinated biphenyl (PCB) levels, and mortality following breast cancer in the Long Island Breast Cancer Study Project	https://cdmcd.co/zYYzby
Chu	The Patient Cancer OUtreach, Navigation, Technology and Support (Patient COUNTS) Project: Developing a virtual patient navigation program for Asian American cancer patients	https://cdmcd.co/gQQZYR
Collin	New perspectives on racial disparities in breast cancer mortality through the quality of care	https://cdmcd.co/3wwgEd
Dighe	Germline variation in the insulin-like growth factor pathway and risk of Barrett's esopha- gus and esophageal adenocarcinoma	https://cdmcd.co/A99pwL
Dodson	Documenting product use patterns to help explain cancer-related chemical exposure inequities among women of color	https://cdmcd.co/QM- MEvW
Dong	Improvements in Geospatial Disparity of Breast Cancer Stage at Diagnosis under Medic- aid Expansion in Ohio, A Space-Time Cluster Analysis	https://cdmcd.co/xvvYpj
Dunston	Clinical and demographic factors associated with follow-up in a hospital-based exercise oncology program	https://cdmcd.co/PJJapw

Elston	The Acceptability of Text Messaging to Reach Racially Diverse Adults Eligible for Colorec- tal Cancer Screening	https://cdmcd.co/833P4b
Falk	A comparison of survey incentive methods among a sample of rural cancer survivors	https://cdmcd.co/mXXGQE
Figueroa	Patient response to receiving a notification of elevated breast cancer risk after regular screening mammogram	https://cdmcd.co/5mmD4y
Glenn	Trends in cancer screening in a Federally Qualified Health Center before and after the onset of the COVID-19 pandemic	https://cdmcd.co/LddKR5
Goldberg	Early-life exposures and age at breast development in the Sister Study cohort	https://cdmcd.co/w33bd5
Granzow	Identifying associations with cancer screening among women in rural, segregated com- munities	https://cdmcd.co/pEEK93
Greenlee	Evaluating harms following lung cancer screening across diverse community-based healthcare systems	https://cdmcd.co/q9968x
Gregoire	Ultraviolet radiation and breast cancer risk in a large prospective cohort	https://cdmcd.co/Z44Qx5
Haider	Investigating Differences in Cancer Survival Among South Asian Americans: A Prospective Cohort Study from the Surveillance, Epidemiology and End Results (SEER) Program, 2001-2015	https://cdmcd.co/v99vwW
Haines	An actionable needs assessment for adolescents and young adults with cancer: the AYA Needs Assessment & Service Bridge (NA-SB)	https://cdmcd.co/bYYLwX
Harris	Estimation of contributing factors to racial disparities in epithelial ovarian cancer survival	https://cdmcd.co/YkkDQd
Hathaway	Improving Survey Response Rates Among Patients at a Cancer Center During a Global Pandemic	https://cdmcd.co/Wkkg3R
Hillyer	E-cigarette use and future health of our youth: Results of a community-based cancer needs assessment	https://cdmcd.co/zYYzbp
Hossain	Cancer Prevention Research During a Pandemic: The Impact of Social Media Advertising	https://cdmcd.co/gQQZYz
Islam	Health Care Access Measures Associated with Palliative Care Use Among Gynecological Cancer Patients: an analysis of the 2016 National Cancer Database	https://cdmcd.co/3wwgEn
Kaddas	Differences in HPV vaccination rates between pediatric, adolescent, and young adult (AYA) cancer survivors and a non-cancer comparison sample	https://cdmcd.co/DwwkDa
Kano	Opportunities and Challenges for Creating Sexual and Gender Minority Cancer Health Equity: Patient and Caregiver Perspectives from a Qualitative Pilot Study	https://cdmcd.co/QMMEvj
Karra	Metabolic Health Phenotype and Risk of Cancer in the Utah Obesity Cohort Study	https://cdmcd.co/xvvYpb
Kasting	Association between Marital Status and HPV Vaccination Recommendation: A National Survey of Obstetrician/Gynecologists	https://cdmcd.co/PJJapv
Kehm	Adolescent physical activity and breast cancer risk before age 50 years: findings from the Prospective Family Study Cohort (ProF-SC)	https://cdmcd.co/93394k
Kiely	High urinary thromboxane B2 associates with lethal prostate cancer in African American men and inversely correlates with aspirin use.	https://cdmcd.co/6ZZQ3b
Lacson	Randomized trial of precision prevention materials to improve short-term primary skin cancer prevention activities among Hispanics	https://cdmcd.co/833P4P
Lin	Examining the association between immune biomarkers and pubertal maturation	https://cdmcd.co/mXXGQq
Lott	Measuring cancer awareness in Africa: Considering cultural relevance of measures includ- ing the Cervical Cancer Awareness Measure	https://cdmcd.co/5mmD4K
Madhivanan	Longitudinal assessment of HPV vaccine preventable types in a sample of sexually active African American women from ten U.S. cities	https://cdmcd.co/RrrvdG
Mama	Impact of COVID-19 posttraumatic stress on psychosocial distress in rural cancer survivors	https://cdmcd.co/LddK8G
Mann	Telehealth Experiences of AYA Cancer Patients and Survivors During the COVID-19 Pan- demic	https://cdmcd.co/w33bma

Markt	Receipt of Next-generation Genomic Sequencing among Patients with Metastatic Col- orectal Cancer (mCRC) in a Real-World Cohort	https://cdmcd.co/dEEdRg
McElfresh	Exploring the Influence of Spirituality on the HRQoL and Loneliness in Hispanic Caregivers of Latinas with Breast Cancer	https://cdmcd.co/pEEK3E
Meadows	Predicting breast cancer risk in a community-based sample of high-risk survey respon- dents	https://cdmcd.co/q996Dd
Mitchell	Patient-Centered Factors Associated with Chemotherapy Communication in Afri- can-American and White Breast Cancer Patients	https://cdmcd.co/nQQrzn
Molsberry	Associations between breast cancer risk estimation and modifiable health behaviors in the Bright Pink Assess Your Risk population	https://cdmcd.co/B77qYn
Mullins	Racial differences in continuity of care and aggressive end-of-life care among women dying with ovarian cancer in SEER-Medicare	https://cdmcd.co/XGG3WP
Murphy	Gestational growth and risk of young-onset colorectal cancer	https://cdmcd.co/J66rP9
Nair	Sleep Duration and Mortality Among Breast Cancer Survivors in the Western New York Exposures & Breast Cancer (WEB) Study	https://cdmcd.co/ybbWRZ
Niehoff	Airborne metals, polycyclic aromatic hydrocarbons and terminal duct lobular involution of the normal breast	https://cdmcd.co/G33JDR
Norbeck	2020 Impact on Research Productivity Survey: The Geographic Management of Cancer Health Disparities Program (GMaP)	https://cdmcd.co/Rrrvb7
Norris	Circuit, interval-based aerobic and resistance exercise improves metabolic syndrome in Black and Hispanic cancer survivors	https://cdmcd.co/DwwkD7
Ochs-Balcom	Novel breast cancer susceptibility identified in African ancestry consortia under linkage peaks	https://cdmcd.co/rMM7Qy
Offor	Evidence of Stage Shift in US Lung Cancer Diagnosis, 2009-2016	https://cdmcd.co/4dd3Xq
Ou	Identifying small geographic areas for educational radon interventions	https://cdmcd.co/KGG49Z
Phillips	Fit2Thrive: Optimization of a mHealth Physical Activity Promotion Intervention for Breast Cancer Survivors	https://cdmcd.co/6ZZQXy
Prajakta	Implementation determinants for improving colorectal cancer screening among New Mexico's American Indian communities	https://cdmcd.co/B77qkw
Prajakta	Improving comprehensive cancer control state plans for colorectal cancer screening in the four-corners region of the United States	https://cdmcd.co/nQQrgp
Quinonez- Zanabria	Racial and Ethnic Disparities in Preoperative Wait Time for Renal Cell Carcinoma Treat- ment	https://cdmcd.co/7rrxXm
Raber	Cancer-related Nutrition and Meal Planning Content on Pinterest	https://cdmcd.co/Mpp6mR
Raber	Initial reactions to a low-touch digital weight loss pilot intervention across 4 diverse cohorts.	https://cdmcd.co/abbR8M
Ramsay	Missed Opportunities for HPV Vaccination among Childhood Cancer Survivors	https://cdmcd.co/E33BgQ
Rohan	Disparities in Distress Screening in Lung and Ovarian Cancer Patients	https://cdmcd.co/A99pbb
Rossi	Use of Dietary Supplements by Breast Cancer Survivors	https://cdmcd.co/j99XvY
Salerno	Effects of a DVD-delivered physical activity intervention on functional performance in cancer survivors	https://cdmcd.co/kggJbA
Santiago- Rodriguez	Colorectal cancer screening adherence and racial/ethnic inequalities among the for- eign-born associated with time living in the U.S.	https://cdmcd.co/v99v8W
Seaman	Discontinuation of survivorship care after head and neck cancer treatment	https://cdmcd.co/bYYLmX
Shariff- Marco	The Patient COUNTS Study: Patient Cancer OUtreach, Navigation, Technology, and Support	https://cdmcd.co/YkkDzd
Shepherd	Evaluating outreach methods for the multi-target stool DNA test for colorectal cancer screening among a screening-eligible employer population	https://cdmcd.co/Z44Qgy

Shu	Discerning patterns of death among bladder cancer patients across race and sex: A population-based database analysis	https://cdmcd.co/WkkgYR
Smith	Health-related quality of life is associated with fecal microbial composition in breast cancer survivors	https://cdmcd.co/zYYzkp
Sutton	Medical Mistrust and COVID-19	https://cdmcd.co/3wwgXn
Sweeney	Outdoor light at night and terminal duct lobular unit involution in the normal breast	https://cdmcd.co/Dwwkza
Tipre	Adaptation to Digital Data Collection for Prostate Cancer Research during Covid-19 in Rural Alabama	https://cdmcd.co/QMMEwj
Tripathi	Cancer mortality among Asian American ethnicities, by nativity and etiology of cancer (2008-2017)	https://cdmcd.co/xvvY5b
Vaca	The HIAYA CHAT Project: Qualitative Feedback on a Health Insurance Education Program for Adolescent and Young Adult Cancer Patients	https://cdmcd.co/PJJaLv
Van Blarigan	A pilot randomized controlled trial of a digital health intervention to increase physical activity during chemotherapy for colorectal cancer: feasibility and acceptability	https://cdmcd.co/9339Xk
Vo	Trends in heart disease mortality among US breast cancer survivors, from 1975-2017	https://cdmcd.co/4dd3za
Wang	Early life exposure to tobacco smoke and ovarian cancer risk in adulthood	https://cdmcd.co/833PXP
Warner	The HIAYA CHAT project: Utilizing an intervention adaptation framework to inform a health insurance education program for adolescent and young adult cancer patients	https://cdmcd.co/mXXGWq
Washington	Longitudinal Analysis of the Indirect Burden of Prostate Cancer Management on Paid and Unpaid Work: Data from Capsure	https://cdmcd.co/5mmDkK
Waters	A Qualitative Inquiry of Cancer Caregiving during Young Adulthood: Challenges, Responsi- bilities, Social Support, and Teamwork	https://cdmcd.co/RrrvAG
Waters	AYA Cancer Patients' and Survivors' Employment Changes during the COVID-19 Pandemic are Associated with High Financial Toxicity	https://cdmcd.co/LddKLG
Werts	Coaching Fidelity in a Lifestyle Intervention for Ovarian Cancer Survivors	https://cdmcd.co/w33bRa
Yue	A prospective analysis of sedentary behavior and risk of multiple myeloma in three large cohorts	https://cdmcd.co/dEEdAg
Zhang	Lower-extremity lymphedema, physical functioning, and activities of daily living in the WHI LILAC survivorship cohort	https://cdmcd.co/q996xd
Zhang	Mammography adherence in relation to function-related indicators in older women	https://cdmcd.co/pEEKQE

POSTER ABSTRACTS

Implementation determinants for improving colorectal cancer screening among New Mexico's American Indian communities

Adsul P, Rodman J, English K, Sussman A, Jim C, Pankratz VS, Edwardson N, Mishra SI

American Indians (AIs) have lower colorectal cancer screening rates than other racial/ethnic populations in the nation. In New Mexico (NM), many AIs receive healthcare at the Indian Health Services (I), Tribal (T), and Urban Indian (U) healthcare facilities where implementation of colorectal cancer screening services (CRCS) is challenging. To understand how best to improve CRCS in these settings and among tribal communities, we conducted two focus groups with providers (n=15) and four focus groups or listening sessions with community members (n=65) in two NM communities. The discussions helped elicit input on appropriate patient-, provider-, and system-level strategies for promoting the uptake and delivery of CRCS in AI communities. While considering specific strategies for implementation, community members and providers highlighted implementation determinants that were unique to the AI communities in NM. Using a grounded theory approach, we identified three themes important for implementing CRCS in I/T/U healthcare facilities. First, several discussants mentioned the need for incorporating the context of NM's AI communities when implementing CRCS. For example, communicating with patients was preferable though text messages, mail, or home visits rather than phone calls. They also highlighted widespread fear of cancer and the very private AI culture, making it challenging to reach men and share experiences to motivate others in the community for CRCS. The need to incorporate intergenerational approaches, native languages, and tribal members as navigators was also underscored as a means to promote cultural congruency in sorely needed CRCS health education delivery. Second, several community members discussed the historical distrust in medical providers and healthcare settings as important reasons for not seeking healthcare. Third, several providers discussed operating healthcare settings under limited resources, resulting in fragmented referral networks and information systems and limited support for patient/provider reminder/ recall systems. Using a community-based research approach allows for identifying determinants prior to implementation, thereby providing the opportunity to understand and address these for sustainable implementation of CRCS.

Improving comprehensive cancer control state plans for colorectal cancer screening in the four-corners region of the United States

Adsul P, Rodman J

Cancer disparities among Hispanic and American Indian populations continue to persist in the four-corner region of the United States, which consist of the states of New Mexico, Arizona, Utah, and Colorado. Supported by the Centers for Disease Control and Prevention (CDC), Comprehensive Cancer Control (CCC) state plans provide a primary way to understand how a state identifies and addresses its burden of cancer. We conducted a content analysis on the most recent four state plans, with an emphasis on colorectal cancer screening. The plans were reviewed and data regarding colorectal cancer screening were extracted. Two analysts independently coded the extracted text and through an iterative process created a final conceptual framework to highlight the three major themes revealed during analysis. All four states included a focus on improving colorectal cancer screening, with specific goals and objectives depending on the state context. Three prominent themes emerged in the analysis. First, states reported their cancer burden using national data from the American Cancer Society, CDC, or the NCI's Surveillance, Epidemiology, and End Results. However, not all plans reported state- level data on colorectal cancer differences by gender, race/ethnicity, and sexual orientation and gender identity, among other social determinants of health. Second, although data informed specific goals and objectives, it was not clear whether the chosen interventions to address these objectives were evidence-based interventions (EBI), or the source of the EBIs, and how they were chosen. Third, very limited information was provided in terms of contextual challenges, stakeholders involved, or the partnerships needed for improving the selection of the EBI or toward the implementation of these EBIs for achieving the goals and objectives in the state context. These gaps highlight opportunities to improve state CCC plans through a harmonization of health equity and implementation research - first, by selecting and adapting contextually-relevant EBIs to implement in this unique region, and second, doing so by bringing researchers and implementation scientists together. Such synergies in research and policies are vital for a coordinated and integrated approach to cancer prevention and control.

Long-term patterns of excess mortality among endometrial cancer survivors

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Purpose of the study: Examining long-term patterns of mortality among cancer survivors compared to the general population may inform planning for surveillance and follow-up care. We investigated excess mortality after endometrial cancer using conditional relative survival estimates and standardized mortality ratios (SMRs). Methods: Women diagnosed with endometrial cancer during 2000-2017 (N=183,153) were identified in the Surveillance, Epidemiology, and End Results (SEER) database. SMRs were calculated as observed deaths among endometrial cancer survivors over expected deaths among demographically similar women in the general U.S. population. Five-year relative survival was estimated at diagnosis and each additional year survived up to 12 years post-diagnosis, conditional on survival up to that year. Results: For the full cohort, 5-year relative survival was 87.7%, 96.2%, and 97.1% at 1, 5, and 10 years post- diagnosis. respectively. Conditional 5-year relative survival first exceeded 95%, reflecting minimal excess mortality compared to the general population, at 4 years post-diagnosis overall, but occurred later for Black women (8 years) compared to White (4 years), and also later for women with regional/distant stage, grade 3 disease, or non- endometrioid histology. The overall SMR for all-cause mortality decreased from 5.90 (95% CI: 5.81-5.99) in the first year after diagnosis to 1.16 (95% CI: 1.13-1.19) at 10+ years; SMRs were consistently higher for non-White women and those with higher stage or grade disease. Conclusions: Overall, endometrial cancer survivors had only a small survival deficit beyond 4 years post- diagnosis. However, excess mortality was greater in magnitude and persisted longer into survivorship for Black women and those with more advanced disease.

The HIAYA CHAT project: Incorporating Pilot Testing Data in the Refinement of a Health Insurance Education Program for Adolescent and Young Adult Cancer Patients

Anderson JS, Warner EL, Waters AR, Mann K, Vaca Lopez PL, Ray N, Tsukamoto T, Kaddas HK, Fair D, Lewis M, Perez GK, Park ER, Kirchhoff AC

Purpose: To pilot test a patient navigator delivered, telehealth-based health insurance education program (HIEP) for adolescents and young adult cancer patients (AYAs). Methods: The HIEP consists of four 30-45 minute sessions about insurance types, terminology, and strategies to manage health care costs during cancer treatment. We pilot tested and iteratively updated the HIEP with N=9 individuals. The research team pilot tested the HIEP with 3 AYAs. We obtained content feedback on the applicability and clarity of the HIEP materials and incorporated changes. Patient navigators then pilot tested the HIEP with 2 AYAs and 4 research/administrative staff (2 staff only completed 1 session) to provide input on the content and clarity of materials and identify optimal HIEP delivery (e.g. tone, technology, length). We created memos on the feedback and made corresponding program modifications. Results: Overall, feedback from the pilot sessions was positive and supported the use of patient navigators to deliver the HIEP. Patients expressed concerns about the reading level of the content and difficulty understanding insurance concepts. Staff members highlighted the importance of delicately handling emotionally charged subjects like treatment costs and insurance legislation. Based on feedback, the following improvements to the HIEP were made: 1) alternative definitions of complex health insurance terms and concepts were added; 2) new educational modalities were added to improve the clarity of the materials through flowcharts and other visuals (e.g., we added a figure showing different types of insurance coverage); and 3) patient navigator training was revised to address emotionally charged topics. Conclusions: While quantitative analysis of an intervention provides important early-stage assessment of materials, pilot testing is an important step to ensure that interventions are appropriately implemented and meet the needs of their target audience. Iteratively pilot testing and incorporating feedback from patients and staff on both content and delivery resulted in a more patient-centered HIEP. Next steps include the delivery of the materials in a randomized controlled trial to ascertain participant feasibility, acceptability, and satisfaction with the HIEP.

Adverse Childhood Experiences and Adult Diet Quality

Aquilina S, Shrubsole M, Butt J, Sanderson M, Schlundt D, Cook M, Epplein M

Purpose: Adverse childhood experiences (ACEs) have been found to be associated with many poor health outcomes, but few studies have evaluated the relationship between ACEs and diet quality, and none using a comprehensive food frequency questionnaire. Thus, the purpose of this study was to examine the association of ACEs and adult diet quality in a largely low-income and racially diverse population. Methods: We conducted a cross-sectional study of 30,854 participants in the Southern Community Cohort Study who completed both a food frequency and ACE questionnaire. Diet was assessed by calculating Healthy Eating Index-2010 (HEI) scores. Using logistic regression, we estimated the odds of worse HEI score by any ACE, number of ACEs, and ACE category (abuse, neglect, and household dysfunction) among all participants and in four groups: Black women, Black men, White women, and White men. As a secondary analysis, we calculated odd ratios adjusted for household income. In addition, we analyzed the association by any ACE with HEI components. Results: Having experienced any ACE was associated with higher odds of worse HEI among all (OR: 1.22; 95% CI: 1.17, 1.27), and for all race-sex

groups (Black women, OR: 1.13; 95% CI: 1.06, 1.21; Black men, OR: 1.19; 95% CI: 1.09, 1.30; White women, OR: 1.22; 95% CI: 1.13, 1.32; White men, OR: 1.51; 95% CI: 1.36, 1.67). Increasing number of ACEs was also associated with increasing odds of a worse HEI (OR for four or more ACEs: 1.34; 95% CI: 1.27, 1.42; p for trend < 0.0001). These associations remained after adjustment for household income, suggesting that there is an association between ACEs and HEI independent of socioeconomic status. The association with worse HEI score was especially strong for ACEs in the household dysfunction category, particularly experiencing a family member in prison (OR: 1.34; 95% CI: 1.25, 11.42) and parents divorced (OR: 1.25; 95% CI: 1.20, 1.31). ACEs were associated with ten of the twelve HEI components, most strongly with total fruit, whole fruit, and solid fat/alcohol/ added sugar. Conclusions: Adverse childhood experiences are associated with poor adult diet quality. More research is needed to evaluate whether trauma intervention strategies can have a positive impact on adult diet quality.

Lifetime BMI, central adiposity and pancreatic cancer risk in a large US cohort

Arjani S, Julian-Serrano S, Saint-Maurice PF, Stolzenberg-Solomon R

Purpose: To examine the association with body mass index (BMI) at different ages and three measures of abdominal adiposity and pancreatic ductal adenocarcinoma (PDAC) risk in US adults aged 51-70 years (y). Methods: We calculated BMI, and used three measures of abdominal adiposity, including waist circumference (WC), waist-to-hip ratio (WHR) and a new body shape index (ABSI) from a risk factor questionnaire in 1995-1996 in the NIH-AARP Diet and Health Study. We included subjects with self-reported height and weight (N=270,722; 163,873 men, 106,849 women) at ages 18, 35, 50y and at baseline. A subset of participants self-reported abdominal adiposity measures: waist and hip circumference (n=197,461; 123,991 men, 73,470 women). Cox proportional hazard models adjusted for age, sex, and smoking were used to estimate hazard ratios (HR) and 95% confidence intervals (CI) corresponding to BMI per 5 kg/m², WC per cm, WHR, and ABSI with PDAC risk. Within each age category, participants with BMI < 18.5 kg/m² were excluded from the analyses. Results: Over an average follow-up time of 13.1y (max: 15.17 y), 3,105 incident PDAC cases (2,033 men, 1,072 women) were identified in the overall cohort, and 2,297 cases (1,534 men, 763 women) with abdominal adiposity measures. A 5-unit increase in BMI was significantly associated with increased PDAC risk [HR (95%CI)] at 18y [1.10 (1.04, 1.17)], 35y [1.07 (1.02, 1.13)], 50y [1.08 (1.04, 1.13)], and baseline age [1.06 (1.02, 1.10)]. This association was stronger in men at 18y [1.11 (1.03, 1.20)], 35y [1.11 (1.04, 1.18)], 50y [1.12 (1.06, 1.19)], and baseline age [1.09 (1.04, 1.15)], but not in women (P-interaction < 0.05 by sex only at 50y). WC per cm increase was significantly

associated with increased PDAC risk in sex-combined models [1.01 (1.00, 1.01)], men [1.01 (1.00, 1.02)], and women [1.01 (1.00, 1.02)]; interactions were not significant. WHR and ABSI were not significantly associated with PDAC. Conclusions: We confirm that increasing adult BMI at ages 18, 35, 50, and > 50 is associated with PDAC with associations stronger in males compared to females. Of the three measures of central adiposity, only WC, which is correlated with BMI, is significantly associated with PDAC.

Breast Cancer Surgery Experiences and Outcomes in Sex and Gender Minority Individuals: A Systematic Review

Arthur EK, Ridgway E, Lee CN

Purpose of the study: The purpose of this study was to summarize and critique contemporary research describing the experiences and outcomes of sex and gender minority (SGM) individuals with breast cancer surgery through systematic literature review. Methods: We performed a comprehensive search using keywords and subject headings to elicit studies that addressed experiences and outcomes of SGM breast cancer survivors in PubMed, Embase, CINAHL, PsycINFO, and LGBT Life. Studies were included if (1) participants were breast cancer survivors who identified as sexual and gender minority (SGM) women or transgender men; (2) one or more of the following were reported: experiences, preferences, or needs related to breast cancer care or surgical treatment decision- making, as well as interactions with healthcare providers and support persons; (3) they were published in English; and (4) they were published in the last 20 years. Covidence® was used to document the inclusion/ exclusion process. Included studies were assessed using The Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Qualitative Research. The authors performed thematic content analysis to identify emergent themes. Results: The search yielded 115 records, and seven studies were included in the final critical appraisal. All studies were qualitative with sample sizes ranging n=10-81, and quality scores ranged 6-8 out of 10. Studies were performed in the U.S. and Canada, and included sexual and gender diverse individuals. Major themes were identified: 1) surgical decision-making, 2) experiences of the post-surgical body, 3) information and support seeking, and 4) interactions with healthcare providers. Subthemes are explored, including body image vs. function, gender policing and politicizing of the body, and intersectionality. Conclusions: SGM breast cancer survivors have unique experiences of healthcare access, decision-making, and quality of life in survivorship. Researchers and clinicians must consider SGM breast cancer survivors' personal values and preferences for treatment, as well as their support network. Culturally sensitive healthcare provider interactions are critical for reducing health disparities in cancer care access and quality of life outcomes.
Living with Metastatic Cancer in the Deep South amidst the COVID-19 Pandemic

Bail JR, Miller PH, Bail SV, Bakitas MA, Baskin ML, Demark-Wahnefried W

Purpose: To assess experiences during the COVID-19 pandemic among metastatic cancer survivors (MCS) residing in the Deep South. Methods: Participants were recruited from a cohort of MCS who provided consent for future research. In July 2020, using a modified Dillman method, 188 MCS were mailed a 69-item comprehensive survey of COVID-19 experiences (e.g., COVID-19 exposure, healthcare and financial disruptions, and coping). Returned surveys were double-key entered into Qualtrics software. Data were analyzed using SPSS. Descriptive statistics were used to characterize the study sample and survey responses. Results: One hundred and sixteen surveys were returned (62% response rate). Respondents (47% female; 92% Caucasian; 8% African American; Mage=66 years; Msurvivorship=53 months) were representative of the potential sample of MCS (18% female cancers; 11% gastrointestinal; 21% genitourinary; 11% pulmonary; 33% melanoma; 5% other). Sixteen percent reported a decrease in income due to job loss and were worried about losing health insurance. While none of the MCS tested positive for COVID-19 at the time of the survey (24% were tested), many had loved ones test positive (42%) or die (16%) of COVID-19. Due to COVID-19, 16% of MCS reported purposely not attending a scheduled in-person cancer care appointment, 35% did not keep general healthcare appointments, and 10% avoided seeking emergency care. Sixty percent practiced social isolation (M=65 days). Many MCS transitioned to telehealth (47%), and reported satisfaction with their telehealth experience (86% cancer care; 80% general health). Some MCS (36%) feared the pandemic would negatively affect their cancer treatment or recovery and over half (57%) were concerned that they had a greater risk of dying from COVID-19. MCS report using their experience in coping with cancer to deal with COVID-19 (79%), experiencing a deeper appreciation of life (77%) and loved ones (79%), being more grateful for each day (79%), and more accepting of things they cannot change (75%). Conclusions: Direct outreach and intervention to support continuity of cancer care among MCS is vital. Future research is needed to investigate the potential downstream effects of disruptions to cancer care and how telehealth may aid in addressing this issue.

Distinct difference in DNA methylation pattern between breast cancer cases and non-cases in a prospective cohort pilot

Bauer MA, Chiang TC, Hsu PC, Su LJ

Purpose: This pilot study examines whether DNA methylation in samples collected before the breast cancer diagnosis is predictive of cancer in a rural cohort population. Methods: DNA samples extracted from saliva were randomly selected from 51 breast cancer cases and 83 non-cases in the Arkansas Rural Community Health study cohort, where 26,347 women between the ages of 18 and 100 were recruited throughout 75 counties in Arkansas. All samples were collected at the time of baseline recruitment between 2007 and 2013. Subject records were linked with the Arkansas Central Cancer Registry for newly diagnosed breast cancer at least one year after initial study enrollment. The R packages ChAMP and CpGAssoc were used to identify significantly differentially methylated positions (DMPs) and regions (DMRs). Gene Set Enrichment Analysis (GSEA) was performed using the online tool NetworkAnalyst, and the KEGG and Reactome pathway databases. The Functional Epigenetic Modules (FEM) algorithm was used to identify differentially methylated gene networks. Results: The study samples included 74 European Americans (28 breast cancer cases) and 60 American Americans (23 cases) aged 20 to 79 years at baseline. The differential analysis identified 1,077 significant DMPs and 37 DMRs associated with breast cancer status after multiple testing correction. Eight DMRs were mapped to genes that were found to be significant to probe position level and included LGALS1 (Galectin 1) and WT1 (Wilms tumor 1). Both are protein-coding genes involved in cell growth and differentiation and have been associated with breast cancer. We also identified 3 FEMs centered around CRMP1, CCL5, and CCDC85B. Notably, CCL5 (chemokine C- C motif ligand 5) has been implicated in breast cancer metastasis. GSEA identified "CREB phosphorylation through the activation of Ras" and "Ras activation upon Ca2+ influx through NMDA receptor" using the Reactome database and "Calcium signaling pathway" and "cAMP signaling pathway" using the KEGG pathways database. Conclusions: We observed DNA methylation differences between samples that later developed breast cancer vs those that had not up until the time point of analysis. We further identified several differentially methylated genes that play a role in the oncogenic process.

National Trends in Younger Onset Obesity-Related Cancer Incidence

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Purpose: Obesity is a risk factor for many cancers, and obesity-related cancer incidence in the United States has been rising over the years. In the recent decades, the younger population of the U.S. has experienced an increase in obesity. These increases have been the highest among ethnic minorities, and in the Southeast, while less evident in the Northeast. The objective of this study was to understand recent trends in incidence of 11 obesity-related cancers among adults under the age of 50. Methods: Age adjusted incidence rates (2001-2016) for cancers of the following sites: female breast, colorectal, endometrial, esophageal, liver, kidney, multiple myeloma, non-cardia gastric, ovarian, pancreatic, and thyroid cancers were calculated using data obtained from Surveillance, Epidemiology, and End Results (SEER-18). Data were stratified by age +/- 50 years old, racial/ethnic groups: non-Hispanic white (NHW), non-Hispanic black (NHB), Asian American or Pacific Islander (AAPI), and Hispanic, and geographic regions: West, Midwest, Northeast, and Southeast, and by sex. We used SEER*Stat and JoinPoint software for analysis. Results: We observed statistically significant increasing trends of incidence among younger adults for colorectal cancer in NHWs, NHBs, and Hispanics, kidney cancer in all race groups, multiple myeloma among NHBs, non-cardia gastric cancer in Hispanic males (APC=3.5%) and thyroid cancer in NHW (APC=22.5%) and AAPI (APC=30%) males. Geographic stratification revealed increasing trends of younger onset female breast cancer in the Northeast (APC= 2.2%). Increasing trends for younger onset myeloma, non-cardia gastric, and thyroid cancers are steepest in the Northeastern U.S. and steepest for younger onset colorectal cancer in the Southeast U.S. Many of these cancers were not increasing among adults over 50. Conclusions: We observed increasing trends in younger onset cancers of the kidney, colorectal, multiple myeloma, non-cardia gastric, thyroid, and female breast. Preventing obesity through education, better food produce availability and programs, and healthcare accessibility may reduce the impact of these cancers. Reduced age for screening for colorectal cancer may improve opportunity for earlier detection and improved prognoses in younger adult

What social factors are most strongly associated with the reduced spread of breast cancer cultural beliefs among African American women?

Bergeron NQ, Strahan DC, Strayhorn SM, Rong A, Villegas M, Rayas N, Jara S, Ruiz I, Khanna AS, Villines D, Watson KS, Ferrans CE, Molina Y

Purpose: African American women experience a disproportionate burden of breast cancer (BC) morbidity and mortality. A contributing factor to this disparity are BC cultural beliefs. Spread through social networks, these beliefs are often inaccurate, fatalistic in nature, and reduce mammogram uptake. Some social factors may be more protective than others against the spread of cultural beliefs among this population, yet these are little known. The purpose of this study was to compare the influence of three social factors: BC supportive social network size, BC survivor informational support, and primary care provider (PCP) informational support among African American women to understand which factor was associated with fewer reported BC cultural beliefs. Methods: This is a secondary analysis of the 2019-20 Offering African Survivors Increased Support (OASIS) study, which assessed African American BC survivors' experiences with cancer care. Study participants were: 1) identified as members of survivors' social networks, 2) female, and 3) 50-74 years of age. Participants completed 60-90 minute surveys regarding their cultural beliefs, BC supportive social network size, BC survivor informational support, and PCP informational support. Multivariate regression analysis was used to assess associations between social factors and cultural beliefs, after adjusting for demographics. Results: Among the 142 participants, 56% were age 50-62, 95% had a PCP, and 60% reported at least one cultural belief. After controlling for age and SES, African American women who reported larger BC supportive social networks were less likely to report cultural beliefs (OR: 0.95 [0.91-0.99], p=0.02). BC survivor and PCP informational support were not significantly associated with BC cultural beliefs (OR: 1.01 [0.69-1.47], p=0.97; OR: 0.82 [0.37-1.83], p=0.62). Conclusions: Women that reported larger BC supportive social networks reported fewer cultural beliefs, potentially due to easier access to BC information and more exposure to individuals with lived experiences supporting evidence-based information. These results suggest the importance of community-level health education interventions that promote evidence-based BC informational support to African American women's social networks.

Cardiometabolic Risk Factors and Risk of Breast Cancer by Molecular Subtype: Case-Control Study of the Mechanisms for Established and Novel Risk Factors for Breast Cancer in Nigerian Women (MEND) study

Bevel MS, Deveaux A, Salako O, Daramola A, Hall A, Alatise O, Ogun O, Adeniyi A, Ojo A, Ayandipo O, Olajide T, Olasehinde O, Arowolo O, Newgard C, Akinyemiju T

Purpose of the Study: We investigated the association of individual (hypertension, waist circumference, body mass index, high density lipoprotein, low density lipoprotein) cardiometabolic risk factors (CMF), CMF index score, and breast cancer risk (overall and by molecular subtype) among Nigerian women. Methods: Multivariable logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (95% CI) for the association of each respective cardiometabolic risk factor and CMF score with breast cancer risk overall and by molecular subtype (Luminal A, Luminal B, triple-negative, or HER2-enriched) for 256 newly diagnosed breast cancer cases and 246 healthy controls recruited in Nigeria. We compared the highest vs. lowest quartile or tertile for each respective factor, and varying combinations of the risk factors. Results: Cases were significantly more likely to have a waist circumference higher than 35 inches (61.2%) compared to controls (38.8%), and 28.5% of cases had 4 or more risk factors compared to 22.8% of controls. Women with 2 - 3 cardiometabolic risk factors (AOR = 0.19, 95% CI = 0.06 - 0.59) had significantly reduced odds of breast cancer. High LDL (AOR = 0.52, 95% CI = 0.36 - 0.76) was also associated with reduced odds of breast cancer. High waist circumference (AOR = 3.86, 95% CI = 2.06 – 7.25) and hypertension (AOR = 2.59, 95% CI = 1.23 - 5.44) were associated with increased odds of overall breast cancer in fully adjusted models. Having 2 - 3 cardiometabolic risk factors (AOR = 0.31, 95% CI = 0.10 - 0.98) was associated with reduced odds of Luminal B breast cancer. Hypertension (AOR = 3.37; 95% CI = 1.24 - 9.14) was positively associated with Luminal A breast cancer, while high waist circumference (AOR = 2.31, 95% CI = 1.00 -5.33) was significantly associated with triple-negative breast cancer. Conclusion: The association of cardiometabolic risk factors with risk of breast cancer appears to be mixed among African women. High waist circumference and hypertension are modifiable risk factors that should be further evaluated as part of cancer prevention strategies in women of African descent.

Characteristics of Home-Based Self-Sampling for Human Papillomavirus (HPV) Among Low-Income Women Using Conjoint Analysis

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Introduction: Home-based self-sampling for HPV testing may help to increase overall cervical cancer screening rates among low-income women by overcoming barriers associated with provider-based screening. The purpose of this study was to assess preferred characteristics for TYPE of HPV self-sampling kit (cervicovaginal or urine collection), DELIVERY of the kit (mail, pharmacy pick-up, or clinic pick-up), RETURN of the kit (mail, pharmacy drop-off, or clinic drop-off), and HPV RESULTS delivery (mail, phone call, or text message). Methods: Data were gathered via an online survey from a sample of low-income women (household income<\$50,000)provided by Dynata (n=940). They evaluated scenarios that varied along 4 dimensions: TYPE, DELIVERY, RETURN, and RESULTS. A fractional factorial design generated 9 representative scenarios with varying characteristics along each dimension. Each scenario was rated on a 0-100 scale. Ratings-based conjoint analysis (RBCA) created importance scores (IS) that showed how much each dimension contributed to the ratings of the scenarios. Partworth utilities (PWU) generated by RBCA indicated the relative preference for a characteristic within each dimension. Results: The women ranged in age from 30-65 (M=51). The most important dimension (IS=32.97) was DELIVERY, with a preference for mail (PWU=1.94) or pharmacy pickup (PWU=1.49) over clinic pick-up (PWU=-3.43). The next most important decisional factor (IS=25.09) was RETURN, with a preference for clinic drop-off (PWU=1.5) and mailed return (PWU=.5) over pharmacy drop-off (PWU=-2.31). Then test TYPE had an IS of 22.59 with a preference for urine collection (PWU=1.84) over cervicovaginal collection (PWU=-1.84). The least important decisional factor was RESULTS (IS=19.35), with participants preferring a phone call (PWU=147) over mailed delivery of results (PWU=0.21) or text messages (PWU=-1.68). Conclusions: Overall, the most preferred test was a urine test delivered by mail, dropped off at a clinic, with results communicated by phone. Researchers could use these findings to better understand facilitators of, and barriers to, self-testing protocols.

Examination of PSA screening in military and civilian men: Analysis of the 2018 Behavioral Risk Factor Surveillance System to characterize shared decisionmaking and screening uptake

Buckenmaier, SS; Smith, AW; Doria-Rose, P; Kobrin, S; Kent, EE; Mollica, ME

Purpose: To determine whether military men report different rates of prostate-specific antigen (PSA) screening than civilian men and if shared decision-making (SDM) is associated with PSA screening. Methods: We used data from the 2018 Behavioral Risk Factor Surveillance System (BRFSS). This study included 102,169 men (26,422 military and 75,747 civilian men). We conducted binomial logistic regression analyses to determine associations between military status and receiving a PSA test in the last 2-years. We then added patient-reports of SDM (if the provider discussed both positives and negatives of receiving a PSA test with the respondent) to the model. Finally, we added an interaction term between military status and shared decision- making to determine if military and civilian men had different associations between SDM and PSA testing. Results: Unadjusted results of our analysis showed that military men have 1.6 times the odds of PSA testing compared to civilian counterparts (95% CI: 1.5, 1.7). This significant finding was still present after adjusting for sociodemographic and health covariates (OR: 1.2, 95% CI: 1.1, 1.2) and after adding SDM to the model (OR: 1.1, 95% CI: 1.1, 1.2). Military men were also significantly more likely to report SDM than civilian men (22.7% and 18.2% respectively, p<0.0001). When examining the interaction between military status and SDM, both military and civilian populations have over 2 times the odds of receiving a PSA test in the last two years if they had reported SDM and the impact of SDM on PSA testing was greater in civilian men (OR: 2.5, 95% CI: 2.3, 2.6 and OR: 2.8, 95% CI: 2.7, 2.9 respectively; p-value for interaction=<0.0001). Conclusions: To our knowledge, this is the first study that examined differences in PSA screening between a nationally representative sample of military and civilian men. Our study found that military men are more likely to report engaging in SDM for PSA testing and receiving a PSA test in the last 2-years compared to civilian men. In addition, results show that SDM plays a role in the receipt of a PSA test in both populations. These findings can serve as a foundation for tailored interventions to promote appropriate SDM for PSA screening in civilian, active duty, and veteran healthcare systems.

Physical Activity in Young BRCA Carriers and Reduced Risk of Breast Cancer

Bucy AM, Larkin T, Conrad K, Anderlik E, Valdivia S, Howe C, Bea JW

Purpose: BRCA carriers have up to an 80% risk of developing breast cancer in their lifetime. Among non- carriers, an active lifestyle has been shown to decrease risk of incident breast cancer. The purpose of this systematic review was to evaluate the relationship between adolescent and young adult (AYA) physical activity levels and lifetime risk of breast cancer among BRCA carriers. Methods: We searched five databases for articles that 1) captured adolescent and young adult physical activity of any type and 2) reported incidence of breast cancer later in life among women carrying the BRCA 1 or 2 gene mutations. Two independent reviewers screened articles at both title/abstract and full text levels, resolving differences by consensus among the full team. Two independent reviewers assessed the selected articles using the NIH Quality Assessment Tools according to study type and used standardized forms to extract relevant data. Results: Of 911 articles identified in the searches, 5 articles met the full set of inclusion criteria (Observational cohorts: N=4 retrospective; Case-control: N=1). All assessments of AYA physical activity relied on self-report. Four-measured overall recreational activity, while one study measured sports involvement. Sample sizes ranged from 68-1185. Overall, 4 of 5 studies showed a significant reduction in breast cancer risk with AYA physical activity ($p \le 0.05$). Of the four positive studies, one study stratified by pre- vs. postmenopausal status and found a significant reduction only for premenopausal breast cancer with AYA physical activity (OR= 0.62, 95%CI 0.40-0.96; P-trend= 0.01). In addition, a significant delay in age of onset of breast cancer was demonstrated in one study (p=0.03). Conclusion: Though there are a limited number of studies examining AYA physical activity, the data suggest that AYA physical activity may reduce risk of incident breast cancer among BRCA carriers. A large prospective longitudinal cohort beginning in adolescence, and with objective measures of physical activity, would better clarify the AYA physical activity and incident breast cancer relation among BRCA carriers. Funding Sources: NIH (CA023074, CA217725)

Racial and ethnic differences in breast and cervical cancer screening among uninsured low-income women in Minnesota

Bustamante, G; Hughes, K; Nelson, C.

Purpose: In the United States, disparities in cervical and breast cancer screening exist by race/ethnicity, income and insurance. The National Breast and Cervical Cancer Early Detection Program (NBCCEDP) offers screening for people who cannot otherwise afford it, but little is known about racial/ethnic differences in service use. Here, we document racial/ethnic differences in utilization of NBCCEDP services in Minnesota during 2012-2015. Methods: Minnesota's NBCCEDP "Sage" offered screening to people who self-report as (a) 40-64 years old, (b) $250\% \le$ federal poverty line, and (c) uninsured/underinsured. Sage maintains records of all women screened through the program, including age and race/ethnicity (i.e. numerator). We defined the eligible population for each race/ethnicity (i.e. denominator) using Small Area Health Insurance Estimates for the state during 2012-2015 for women were eligible for Sage. For each group, we estimated the rate of utilization of cervical cancer screening by dividing the number of women screened at least once during 2012-2015 by the average number of eligible women per year. The rate of utilization of breast cancer screening was estimated by dividing the average number of women screened for per year by the average number of eligible women per year. Results: An average of 31,450 women/year were eligible for screening through Sage during 2012-2015. Sage screened 12,961 women for cervical cancer at least once and an average of 11,317 women/year for breast cancer. Hispanic women had the highest rates of screening with 89.6% of those eligible (3,917/4,371) receiving cervical cancer screening during the 3-year period and 74.0% (3,235/4,371) receiving annual breast cancer screening. Meanwhile, only 28.5% (5,994/21,000) and 25.8% (5,419/21,000) of eligible non-Hispanic white women were screened for cervical and breast cancer in the study period, respectively. Conclusions: Guideline-consistent screening is critical for reducing impact from cervical and breast cancers. In contrast to national estimates, we found high levels of screening among Hispanic women suggesting that Sage has been successful in reaching minority populations. Reasons for low utilization of screening services among non-Hispanic white women need to be further explored.

"After having it annually for so long, I would be anxious about now waiting so long": Women's Perceptions and Preferences Related to Cervical Cancer Screening

Bustamante, G; McRee, AL; McNair, K; Fontenot, H

Purpose: Current risk-based guidelines for cervical cancer screening (CCS) allow for individualized screening that minimizes unnecessary testing. However, these guidelines are complex and may not be easily understandable which could lead to confusion among women. We aimed to understand women's knowledge and preferences about CCS in light of recent guideline changes and examine if differences exist across race and ethnicity. Methods: We conducted four online text-based focus groups with a national sample of women aged 27-45 years (n=49) in February 2020. Participants were recruited via InsideHeads, LLC, a market research company. After completing a short demographic survey, an experienced moderator used a semi- structured guide to solicit participants' perceptions of routine gynecologic care and CCS. We summarized survey data using descriptive statistics. Two authors analyzed transcripts using conventional content analysis including initial coding and collapsing codes into broader themes. A third author reviewed codes and resolved any intercoder discrepancies. The entire research team agreed on final themes. Results: The majority of women were white (65%) and had health insurance (90%). Most women reported having a routine gynecological exam in the past year (70%), and believed they were up-to-date on their CCS (83%). We identified four common themes: (1) low perceived risk of human papillomavirus (HPV) coupled with low knowledge about HPV as a causative factor for cervical cancer; (2) confusion about--and mistrust of--recent individual risk-based guidelines that determine the indicated type of test (Pap or HPV) and timing for CCS; (3) mixed opinions related to a potential future option to perform a self-swab hrHPV test; and (4) provider recommendation was important for some women, but others voiced substantial distrust towards providers and the healthcare industry. Themes were similar across race and ethnicity. Conclusions: Findings highlight women's confusion and mistrust about current CCS guidelines. Effective communication strategies should: consider women's gaps in knowledge about the role of HPV in cancer; include the rationale for changes in guidelines and types of tests available; and build trust between patients and providers.

Disparities in Food Insecurity among Cancer Survivors during the U.S. COVID-19 Pandemic

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Purpose: The purpose of the study is to (1) compare the prevalence of COVID-19 associated food insecurity among cancer survivors to adults without a history of cancer and (2) examine social and demographic characteristics associated with COVID-19 related food insecurity. Methods: Data for these analyses were obtained from the publicly available COVID-19 Household Impact Survey, conducted by NORC. Data from Week 1 (April 20-26, 2020), Week 2 (May 4-10, 2020), and Week 3 (May 30th - June 8th, 2020) are available, which were merged for this analysis. Our primary exposure was cancer survivor status based on participant's self-report of a cancer diagnosis in their lifetime. Primary outcomes of food insecurity were categorized on how often (response options – often true, sometimes true, never true) participants reported the following: "We worried our food would run out before we got money to buy more" or "The food that we bought just didn't last, and we didn't have money to get more". We also examined whether participants reported receiving or applying for food pantry assistance or Supplemental Nutrition Assistance Program benefits during the pandemic period. Chi-square tests were used to compare reported food insecurity items among cancer survivors compared to general U.S. adult population. Multinomial logistic regression was used to compare frequency of food insecurity among cancer survivors to adults without cancer after adjustment for age, sex, race/ethnicity, education, household income, and area of residence (urban/rural). Results: Twenty-six percent of participants reported often or sometimes worrying about food running out and 20% of participants reported food not lasting and not having money to get more; the prevalence did not significantly differ by cancer history. Adults without a history of cancer were significantly more likely to report trying to apply for Supplemental Nutrition Assistance Program (2.4% versus 0.8%, p = 0.32) while cancer survivors were significantly more likely to report receipt of other forms of assistance (3.8% versus 2.2%, p = 0.018). Conclusions: COVID-19 associated food insecurity is common. Expansion of policies and community interventions may help mitigate disparities in food security among US adults.

Dietary acid load, serum polychlorinated biphenyl (PCB) levels, and mortality following breast cancer in the Long Island Breast Cancer Study Project

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Purpose: To examine the associations between dietary acid load (DAL) and risk of all-cause and breast cancer-specific mortality, overall and by serum total PCB levels, among women who participated in a population-based study of breast cancer. Methods: Participants included 1479 women who were diagnosed with first primary invasive or in situ breast cancer in 1996-1997 and were followed through 2014. After a median follow-up of 17 years, we identified 585 deaths (230 breast cancer-specific deaths). DAL was estimated by calculating the Potential Renal Acid Load (PRAL) and the Net Endogenous Acid Production (NEAP) scores using nutrient estimates derived from the baseline Food Frequency Questionnaire completed within 3 months of diagnosis. PCBs and lipids (used to correct PCB levels) were measured in serum samples in a subsample (n=591) of women. We used Cox regression to estimate covariate-adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) for the associations between PRAL/NEAP quartiles and all-cause and breast cancer-specific mortality. Effect measure modification was evaluated by conducting stratified analyses (≤median versus >median PCBs) for PRAL/NEAP median splits, and by including interaction terms between PRAL/ NEAP and PCBs in fully-adjusted models. Results: The highest (vs. lowest) quartiles of PRAL and NEAP were not associated with all-cause or breast cancer-specific mortality among women overall. In the upper median of PCBs, we observed elevated rates of all-cause mortality for the upper (vs. lower) median of PRAL (HR=1.40, 95%CI=0.94-2.08) and NEAP (HR=1.37, 95%CI=0.93-2.03) in fully-adjusted models; however, confidence intervals included the null and the multiplicative interactions were not statistically significant (PInteraction>0.10). In the lower median of PCBs, we observed an inverse association for the upper (vs. lower) median of NEAP and breast cancer-specific mortality (HR=0.45, 95%CI=0.21-0.96), and a null association for the upper (vs. lower) median of NEAP and breast cancer-specific mortality in the upper median of PCBs (HR=1.01, 95%CI=0.49-2.07). Conclusions: Our findings suggest that DAL may be associated with increased risk of all-cause mortality following breast cancer among women with high serum total PCB levels.

The Patient Cancer OUtreach, Navigation, Technology and Support (Patient COUNTS) Project: Developing a virtual patient navigation program for Asian American cancer patients

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Purpose of study: Cancer is the leading cause of death among Asian Americans. Many Asian American cancer patients do not receive appropriate treatment and little is known about their navigational needs. We report baseline survey results of a pilot study that provides culturallyand linguistically-tailored in-person navigation for Asian American cancer patients. Methods: We recruited 26 adult Asian American patients with newly diagnosed, stage I-III colorectal, liver, or lung cancer in San Francisco from hospitals and the regional cancer registry. Participants completed a baseline survey. We assessed health-related quality of life (HRQOL) using the Functional Assessment of Cancer Therapy: General [FACT-G] questionnaire in addition to ongoing needs. We calculated descriptive statistics (means and standard deviations for numeric variables; frequencies and percentages for categorical variables). The study is ongoing and we will present changes in HRQOL status and needs during follow-up. Results: The mean age of participants was 65 years old (SD 12, range 38 to 81), with 62% women. Participants spoke Chinese (73%), Vietnamese (15%), or English (12%); 74% reported limited English proficiency. Most were foreign-born (91%) and 71% had a high school education or less. Forty-six percent of participants had lung, 35% colorectal, and 20% liver cancer. The FACT-G mean scores were: physical well-being 20.1 out of 28 (SD 6.0); support well-being 20.2 out of 28 (SD 6.0); emotional well-being 16.8 out of 24 (SD 5.1); functional well-being 15.0 out of 28 (SD 7.0); total 71.8 out of 108 (SD 18.3). Participants presented a variety of needs, with 83% requesting at least one type of assistance. Most wanted to learn more about nutrition and physical activity (63%), medical interpretation (58%), and cancer information (diagnosis, staging, and treatment options) (48%). Discussion: In this sample of limited English proficient Asian American cancer patients, HRQOL was low (relative to a sample of U.S. adult cancer patients) [Pearman 2014] and navigational needs were high. These results will inform the next phase of the project to develop and implement a culturally- and linguistically-appropriate virtual cancer navigation program to address needs among Asian Americans with cancer.

New perspectives on racial disparities in breast cancer mortality through the quality of care

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Purpose: Non-Hispanic Black (NHB) women are more likely to die from breast cancer (BC) mortality compared with non-Hispanic White (NHW) women, yet there is limited understanding of factors that contribute to this disparity. We evaluated the contribution of surgical facility characteristics and delay in primary surgical management to BC mortality disparities between NHB and NHW women residing in Atlanta. Methods: We identified 2,224 NHB and 3,787 NHW women in the Georgia Cancer Registry, who were diagnosed in Atlanta with a stage I-III BC (2010-2014). Facility characteristics included annual patient volume, facility type (non-profit, for-profit, or government), and accreditations, which were abstracted from the NCI Hospital File. Delay in surgery defined as >30 days from the date of diagnosis. We computed the odds ratios (OR) and 95% confidence intervals (CI) associating surgical facility characteristics with surgical delay and used Cox proportional hazards regression to compute the hazard ratios (HR) and 95%CI associating delay and facility characteristics with BC mortality. Results: Overall, 63% of NHB women received surgery >30 days after their diagnosis, compared with 49% of NHW women. Women who received surgery at for-profit and government facilities had a reduced odds of surgical delay (OR=0.74, 95%CI 0.64, 0.86 and OR=0.45, 95%CI: 0.38, 0.53 respectively) compared with non-profit facilities. Across all facility characteristics, NHB women were more likely to experience a delay compared with NHW women. Surgical delay was not associated with BC mortality (HR=1.03, 95%CI 0.85, 1.25). BC patients who received surgery at for-profit facilities had 1.35-times the mortality rate compared with those who received surgery at a non-profit facility (95%CI 1.01, 1.40). NHB women who received surgery at a non-profit or for-profit facility had a nearly 2-fold increase in BC mortality (HR=2.18, 95%CI 1.66, 2.86 and HR=2.21 95%CI 1.29, 3.80, respectively). Women who received surgery at a government facility, the race disparities were attenuated (HR=1.23, 95%CI 0.67, 2.26). Conclusions: Our results suggest that surgical facility characteristics may impact both surgical delay and BC mortality. However, the impact on patient outcomes varies among NHB and NHW women.

Germline variation in the insulin-like growth factor pathway and risk of BarrettV¢,Ç^{..},Ñ¢s esophagus and esophageal adenocarcinoma

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Purpose: Genome-wide association studies (GWAS) of esophageal adenocarcinoma (EAC) and its precursor, Barrett's esophagus (BE), have uncovered significant genetic components of risk, but most heritability remains unexplained. Strong epidemiologic associations between central obesity and risk of BE/EAC have suggested a role for metabolic signaling disturbances, such as in the insulin-like growth factor (IGF) axis, in the pathophysiology of BE/EAC. Targeted assessment of genetic variation in such biologically relevant pathways, may identify missed susceptibility signals. Hence, we sought to examine the association between germline variation in the IGF pathway and its component genes with risk of BE and EAC. Methods: Principal components analysis (PCA) was employed to evaluate pathway-level and gene-level associations with BE/EAC, using genotypes for 270 SNPs in or near 12 IGF-related genes, ascertained from 3295 BE cases, 2515 EAC cases, and 3207 controls in the Barrett's and Esophageal Adenocarcinoma Consortium (BEACON) GWAS. Gene-level signals were also assessed using Multi-marker Analysis of GenoMic Annotation (MAGMA) and SNP summary statistics from BEACON, and an extended BE/EAC GWAS meta-analysis (6167 BE cases, 4112 EAC cases, and 17,159 controls). Results: Global variation in the IGF pathway was associated with risk of BE (P=0.0015). Gene-level associations with BE were observed for GHR (growth hormone receptor; p=0.00046, FDR q=0.0056) and IGF1R (IGF1 receptor; p=0.00903, q=0.0542). These gene-level signals remained significant at q<0.1 when assessed using data from the largest available BE/ EAC GWAS meta-analysis. No significant associations were observed for EAC. Conclusions: This study represents the most comprehensive evaluation to date of inherited genetic variation in the IGF pathway and BE/EAC risk, providing novel evidence that variation in two genes encoding cell-surface receptors, GHR and IGF1R, may influence risk of BE.

Documenting product use patterns to help explain cancer-related chemical exposure inequities among women of color

Dodson RE, Cardona B, Zota A.R., Robinson Flint J, Navarro S, Shamasunder, B.

Purpose: Women of color, particularly Black women, have higher exposures to certain consumer product chemicals, including some that are linked to cancer based on endocrine activity promoting tumor growth. Differences in product use, partially driven by socio-cultural factors, may contribute to exposure inequities. However, the lack of data on product use by women of color makes it difficult to connect product use patterns with exposure and health disparities. Methods: We surveyed 357 California women (aged 18-34 years) about their use of cosmetics, hair, feminine care, and leave-on and rinse-off personal care products. We compared product use, frequency of use, and use of scented products among Black, Hispanic/Latinx, Asian, and White women. We also asked why women choose products and where they seek additional information about products. Results: Women reported using, on average, 8 of the 54 product types daily, and some up to 30 products daily. Use of specific products was correlated so aggregate chemical exposures are a concern. There were significant differences in use by race/ ethnicity for about half of the product types. Hispanic/ Latinx and Asian women reported greater use of cosmetics than Black and White women, Black women reported significantly higher number of hair products and slightly more feminine care products. Scented product use was common; with 70% of women reported at least half products asked about as scented. Women reported choosing products because of price and effectiveness, and less so brand name, and relying on family and friends for product information. Conclusions: We found significant differences in product use and frequency of use across races/ethnicities. These data are important for developing strategies to limit exposure to consumer product chemicals associated with cancer in order to address exposure and health inequities. Results suggest that behavior change interventions focused on alternative products of similar price and effectiveness and supported by friends and family could be effective. Tools that support individual changes such as smartphone applications may help but should be complemented by approaches that tackle policies and external and internal socio-cultural pressures that perpetuate disparities.

Improvements in Geospatial Disparity of Breast Cancer Stage at Diagnosis under Medicaid Expansion in Ohio, A Space-Time Cluster Analysis

Dong W, Kim U, Koroukian SM, Rose J

Purpose: The purpose of the study is to examine whether geospatial disparities in advanced-stage breast cancer at diagnosis were reduced after the implementation of Medicaid expansion under the Affordable Care Act in Ohio. Methods: We examined the association between the implementation of Medicaid expansion and changes in geospatial clustering of advanced-stage breast cancers in Ohio. The data were obtained from the Ohio Cancer Incidence Surveillance System and the study included women age 20-64 years diagnosed with invasive breast cancer between 2010 and 2017. We used an ordinal-based space-time scan statistic on SEER (Surveillance, Epidemiology, and End Results) summary stage, local, regional, and distant, corresponding to order 1, 2, and 3, where increasing numbers represent more severe disease. The study period was dichotomized into pre-expansion (2010-2013) and post- expansion (2014-2017). We compared the presence of clusters of more severe stage cases pre- and post-expansion. We also conducted a subanalysis of women with private insurance, allowing for an examination of existing spatiotemporal trends in stage at diagnosis independent of Medicaid expansion. Results: Our study population included 33,537 women, after excluding unknown stage/unstaged cases. Based on the distribution of cases by stage in a given area compared to that of the state, we observed changes in clusters of more severe stage cases from pre- to post-expansion. Specifically, there were eight space-time clusters detected, of which two were statistically significant (p<.05) and six were non-significant (p>.4). All of the clusters were in the pre- expansion period, but none was identified in the post-expansion period. These clusters were in the four largest metropolitan areas in Ohio with the two significant clusters in the city of Toledo and a suburb of Cincinnati. Patients in these areas were more likely to be African American, unmarried, have no insurance, and live in a disadvantaged neighborhood in terms of income, education, and vehicle availability. Conclusion: Our study suggests that addressing disparities in health insurance through policy interventions such as Medicaid expansion may reduce disparities in breast cancer stage at diagnosis among women living in disadvantaged neighborhoods.

Clinical and demographic factors associated with follow-up in a hospital-based exercise oncology program

Dunston ER, Walker D, White S, Ulrich CM, Oza S, Zingg RW, Hansen PA, Coletta AM

Purpose: To identify factors associated with returning for a follow-up assessment after participation in Huntsman Cancer Institute's Exercise Oncology Program, (Personal Optimism With Exercise Recovery, POWER). Methods: Data were extracted from the electronic medical record and exercise oncology program databases for patients who participated in POWER, between 2016-2019. Clinical factors included body mass index (BMI), waist circumference, cancer type, cancer stage, and recent cancer treatment history (surgery, radiation, immunotherapy, chemotherapy, hormone therapy, bimodal, and multimodal therapy). Recent treatment history was defined as occurrence within 12- months of enrollment in POWER. Demographic factors included age, sex, ethnicity, race, and residence in an urban or rural area. Binary logistic regressions were utilized to identify clinical and demographic factors associated with not returning for follow-up. The cancer treatment and cancer stage models were adjusted for BMI, age, sex, and urban/rural status. The cancer type model was also adjusted for BMI, age, sex, urban/rural status, and number of recent cancer treatments. Results: Among 849 cancer patients (61.3±13.6 years; 62% females; 91% white; 95% non- Hispanic) nearly 30% returned for a follow-up assessment, and the most prevalent cancer types in this cohort were breast (34%), prostate (13%), and multiple myeloma (8%). The following clinical and demographic factors were significantly associated with not returning for follow-up: male sex (OR 1.70, 95% CI 1.23,2.35), overweight BMI (25.00-29.99 kg/m^2; OR 1.62, 95% CI 1.11, 2.38), and greater waist circumference (OR 1.01, 95% CI 1.00,1.02). In the model further adjusted for cancer type, only multiple myeloma (OR 2.25; 95% CI 1.03,4.89) and endometrial cancer (OR 0.40, 95% CI 0.17,0.95) were associated with not returning for follow-up assessments. No other factors (unadjusted or adjusted) were significantly associated with not returning for follow-up. Conclusions: Male sex, overweight BMI, waist circumference, and cancer type may indicate survivors who are less likely to return for follow-up assessments in a hospital-based exercise oncology program. Findings may facilitate interventions to encourage follow-up and promote exercise engagement.

The Acceptability of Text Messaging to Reach Racially Diverse Adults Eligible for Colorectal Cancer Screening

Elston Lafata J, Lazard AJ, Collins MK, Fleming PJ, Brenner AT, Crockett S, Cykert S, Reuland D

Purpose. Healthcare organizations increasingly are looking for ways to support shared decision making (SDM). Patient portals enable secure messaging and integration with medical records, but their use leads to racial inequities in program reach. We explored perceptions of and willingness to engage with three types of text message content for SDM in colorectal cancer (CRC) screening. Methods. We identified adults aged 50-75 years via an online panel. Sampling quotas ensured no more than half the sample was White and 27% had not previously screened for CRC. Participants were allocated randomly to three message conditions: general support (if you think colon cancer affects only a certain type of person, you are not alone), doctor's office support (your doctor's office is here to help you take control of your health), and standard (some colon cancers run in families, but most don't). Participants viewed messages on their phones and responded to questions using 5-point Likert scales to indicate salience, worry and willingness to receive future messages. Results. Participants (N=291) on average were aged 60 years (6.6 SD), 69% female, and 10% Asian/51% Black/38% White. Almost half had a college degree (48%), and 40% reported household income <\$50,000. Regardless of condition, over half (57%) reported initial message salience (grabbed their attention quite a bit/very much), few reported worried feelings (<9% quite a bit/very much), and 74% expressed a willingness (agreed/strongly agreed) to get similar messages from their doctor's office. Whites expressed less salience (50%) and less worry (4%) compared to Blacks (61%/12%) and Asians (62%/14%). Blacks were substantially more willing to sign up for future messages (82% vs. 69% Asians/63% Whites). Among Blacks, general support and doctor's office support messages outperformed standard messages; general support and standard messages outperformed doctor's office support among Whites. Conclusions. Among an online sample, we found support for text messaging to engage racially diverse adults in CRC screening decisions. Blacks reported a willingness to use text messaging to learn about CRC screening, particularly if messaging contained supportive language. Further testing among primary care patient populations is ongoing.

A comparison of survey incentive methods among a sample of rural cancer survivors

Falk, DS, Winkfield, KM, Tooze, JA, Shore, K, Strom, C, Weaver, KE

Purpose: Rural residents face barriers to participation in cancer research and are underrepresented in cancer- related studies. We compared two incentive methods encouraging survey completion among this survivor population. Methods: Eligible individuals included those: 1) aged 18+ identified from Wake Forest Baptist Health's electronic medical record, 2) with a cancer diagnosis other than non-melanoma skin cancers, 3) >6 months post-definitive treatment and/or receiving ongoing systemic maintenance therapies, 4) received treatment at any Wake Forest location from January 2014 to January 2019, and 5) resided in 1 of 7 priority, rural (Rural-Urban Commuting Area [RUCA] codes 4-10) counties. Participants were mailed a recruitment packet with a paper survey and postage paid envelopes and completed the surveys online or on paper between February 2020 and April 2020. Participants were randomly assigned to one of two incentive arms. The first arm included a \$2 bill and respondents could opt into a drawing for one of five \$50 gift cards upon survey completion (upfront incentive). The second arm provided respondents with a \$10 gift card upon completion and return of the survey (contingent incentive). A Chi square test assessed the response rates between the two incentive arms. Results: A total of 2,831 individuals meeting initial eligibility criteria were randomized (n=1,415 for the upfront and n=1,416 for the contingent incentive arms). In the first arm, 81 packets were returned, 21 individuals were deceased, and 2 proxies completed the survey. In the contingent arm, 85 packets were returned, 23 individuals were deceased, and no proxies completed the survey. A total of 304 surveys were received from the upfront incentive arm for a response rate of 22.8%, and 216 surveys were received from the contingent incentive arm for a response rate of 16.2% (P<0.0001). Conclusions: Among rural cancer survivors, incentivizing survey completion with an upfront \$2 bill and a drawing of a \$50 gift card encouraged a slightly higher survey response rate compared to a contingent gift card; however, the response rate was <25% in both groups. Upfront incentives may be useful, but will likely need to be combined with other strategies to increase rural participants in cancer research.

Patient response to receiving a notification of elevated breast cancer risk after regular screening mammogram

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Background: Population-based screening for breast cancer risk can identify unaffected women at elevated risk and inform them of risk-management options. The James Cancer Hospital recently began assessing risk for women undergoing routine screening mammography. Women found to have ≥20% lifetime risk are notified – with their mammogram results via mail and electronic medical record - that they may be at elevated risk of breast cancer and should consider consulting a high-risk provider. This initial study examined findings from a subsample who participated 2-6 weeks post-notification. Purpose: We sought to determine whether women noticed and understood the notification, and to examine their reactions to the notification of elevated risk. Methods: Of 415 women recruited, 150 (36%) completed the survey, which included items to assess memory and comprehension of the notification, and whether participants had (a) seen a healthcare provider since the notification, and (b) discussed breast cancer risk and management options during that appointment. Results: Participants (aged 40-69; mean=50.8 years) were mostly White (86%), well-educated (77%), and with above-average income (65%). Most remembered receiving the notification (73%), perceived the information not to be complex (73%), and were confident they understood the notification (93%). Somewhat fewer (64%) remembered that the notification indicated they may be at elevated risk for breast cancer, and 44% also recalled the suggestion to meet with a healthcare provider about this risk. Of the 28 participants who had already seen any healthcare provider in the few weeks since the notification, 50% discussed breast cancer risk during that appointment and 25% said they did so because of the notification. Discussions included family cancer history, actual risk of developing breast cancer, and options for additional imaging or testing. Conclusions: These findings indicate that population-based screening associated with routine mammography can motivate women at elevated breast cancer risk to discuss their risk and management options with a healthcare provider. For some proportion of women, however, complementary communication strategies may also be needed to ensure they gain awareness of their higher-risk status.

Trends in cancer screening in a Federally Qualified Health Center before and after the onset of the COVID-19 pandemic

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Purpose: The COVID-19 pandemic has forced health care systems to rapidly transform care delivery, resulting in delays in non-critical care. To date, data emerging from health systems has primarily captured changes in cancer screening volume without calculating screening rates, a more important metric for population health. The purpose of this study was to assess the impact of the pandemic on up-todate cancer screening rates in a large Federally Qualified Health Center (FQHC) serving a primarily Latino population. Methods: We evaluated electronic health record data between October 2019 and October 2020 in a large FQHC in Los Angeles County. Monthly up-to-date breast (mammogram in past 2 years), cervical (Pap test in past 3 years), and colorectal cancer (CRC) rates (fecal immunochemical test in past year, colonoscopy in past 10 years) were calculated among age- eligible patients, including approximately 7500 patients for breast, 20,000 for cervical, and 12,000 for CRC screening. Results: In the period preceding the onset of COVID-19 (Oct 2019-March 2020), monthly rates of upto-date breast cancer screening among women ages 50-74 years hovered around 70%. Average monthly rates in the post-COVID period (April-Oct 2020) declined slightly with the lowest rate, 68%, observed in October 2020. Monthly cervical cancer screening rates among eligible women ages 24-64 years remained steady across the observation period, ranging from 72-73%. Up-to-date CRC screening rates fluctuated between 56-58% among patients ages 50-74 years pre-COVID-19, but steadily declined post-COVID to 47% in October 2020. Conclusion: We observed minimal changes in up-to-date rates of breast and cervical cancer screening in the 8 months following the onset of the pandemic, but a substantial decline in CRC screening. The greater reduction in CRC screening rates (vs. breast and cervical) may be due to the recommended annual interval for stool-based testing, the predominant CRC screening modality in safety net settings. The ongoing pandemic's impact on breast and cervical cancer screening rates over time remains unclear as more women become eligible for their next recommended test. FQHCs are an important research setting given disproportionate impacts of COVID-19 on populations they serve.

Early-life exposures and age at breast development in the Sister Study cohort

Goldberg M, D'Aloisio AA, O'Brien KM, Zhao S and Sandler DP

Purpose: Early age at breast development (thelarche) has been associated with increased breast cancer risk. Average age at thelarche has declined over time, but there are few established risk factors for early thelarche. We examined associations between pre- and postnatal exposures and age at thelarche in a U.S. cohort of women born between 1928 and 1974. Methods: Breast cancer-free women ages 35-74 years who had a sister diagnosed with breast cancer were enrolled in the Sister Study from 2003-2009 (N=50,884). At enrollment, participants reported their age at thelarche, which we categorized as early (≤ 10 years), average (11-13 years), and late (\geq 14 years), as well as information on early-life exposures. We estimated odds ratios (ORs) and 95% confidence intervals (CIs) for early and late the larche relative to average age at the larche using polytomous logistic regression for each early-life exposure, adjusted for birth cohort, race/ethnicity and family income level in childhood. We examined modification by birth cohort, race/ethnicity, family income, relative weight at age 10, and extent of breast cancer family history through stratification. Results: Early thelarche was more common in recent birth cohorts and among non-Hispanic Black and Hispanic women. Early thelarche $(\leq 10 \text{ years})$ was associated with multiple prenatal exposures: gestational hypertensive disorder (OR=1.25, 95% CI 1.09-1.43), maternal diethylstilbestrol (DES) use (OR=1.23, 95% CI 1.04-1.45), maternal smoking during pregnancy (OR=1.20, 95% CI 1.13-1.27), and young maternal age (OR 1.30, 95% CI 1.16-1.47 for <20 vs 25-29 years). Being firstborn was also associated with early the larche (OR=1.25, 95% CI 1.17-1.33). Low birthweight (<2500 vs 2500-3999g) was suggestively associated with both early (OR=1.06, 95% CI 0.96-1.17) and late (OR=1.15, 95% CI 1.05-1.25) thelarche, as was use of soy formula in infancy (Early: OR=1.10, 95% CI 0.93-1.30; Late: OR=1.07, 95% CI 0.92-1.25). Patterns were generally similar across strata of modifiers of interest. Conclusion: Associations between pre- and postnatal exposures and age at the larche suggest that the early-life environment may influence breast development and therefore may also affect breast cancer risk by altering the timing of pubertal breast development.

Identifying associations with cancer screening among women in rural, segregated communities

Granzow ME, Popalis ML, Stoltzfus KC, Leach KM, Moss JL

Cancer incidence and mortality are higher among rural and racially-segregated communities; however, this burden can be decreased through routine cancer screening. Thus, it is important to identify barriers and facilitators to cancer screening among this vulnerable population to best address these disparities. This mixed-methods study aimed to assess multilevel factors related to cancer screening among women from 14 rural, segregated counties in Pennsylvania. We recruited 100 participants (women ages 50-65) to complete a quantitative survey. Then, we invited 16 of these participants to take part in qualitative focus groups. The participants discussed attitudes and barriers surrounding colorectal and cervical cancer screening tests. We used a concurrent mixed methods approach, using logistic regression to assess quantitative relationships between multilevel factors and cancer screening, and content analysis to identify themes related to cancer screening. In quantitative analysis, 89% and 65% of participants up-to-date with cervical and colorectal cancer screening, respectively. Participants' travel time from their home to provider's office moderated the relationship between cancer fatalism and screening. In qualitative analysis, we identified three themes about multilevel barriers to cancer screening in this population: concerns about privacy, medical mistrust, and logistical barriers (including travel time to providers, burden on family members, and lack of local high-quality facilities). Therefore, compounding multilevel barriers may decrease the likelihood to be screened for cancer. Many of the barriers to cancer screening identified in this mixed methods study can be linked to the inadequate quality and continuity of care provided by local health systems in rural and segregated communities. Future research should focus on ways to address the multilevel barriers to cancer screening through primary care interventions to facilitate increased screening rates with limited resources.

Evaluating harms following lung cancer screening across diverse community-based healthcare systems

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Purpose of the study: Lung cancer screening (LCS) with low-dose CT imaging has been shown to reduce lung cancer mortality in high-risk individuals. However, LCS can lead to potential harms, including false positive results, follow-up imaging and invasive diagnostic procedures, and downstream complications. Assessing the rate and distribution of these potential harms is key to evaluating effectiveness and determining if benefits outweigh harms for LCS in community-based care settings and across populations. Methods: We used electronic health record data on LCS delivery, results, and follow-up care, joined with tumor registry data, to establish a longitudinal cohort of patients who underwent LCS January 2014-September 2018 in the five health systems participating in the NCI-funded Lung Population-Based Research to Optimize the Screening Process (PROSPR) Consortium. False positives were defined as scans with findings of Lung- RADS scores of 3 or 4 with no lung cancer diagnosed within 12 months. Diagnostic procedures and complications were identified via diagnosis and procedure codes. Covariates of interest include demographics, comorbidities, smoking history, and area- level social indicators. A matched control group was assembled from underlying health system patient populations to assist with attribution of potential harms to lung cancer screening. Results: Over 18,000 patients aged 55-80 years received LCS, of which 3% were Asian/Pacific Islander, 5% Hispanic, 10% Black, 76% White, and 45% female. In preliminary analysis, 22% received at least one non-screening chest CT in the 12-month interval following screening, while 5% received a PET scan, and 26% received a chest x- ray. About 2% received a bronchoscopy, and 1% had a thoracotomy or other thoracic surgery. Conclusions: A substantial proportion of patients undergoing LCS have additional imaging or other diagnostic procedures during the following year. Additional analyses underway on false positive rates and post-procedure complications, along with control group comparisons, will provide a more comprehensive assessment of the occurrence and distribution of attributable post-screening harms that should be considered alongside benefits when evaluating the effectiveness of LCS in routine care.

Ultraviolet radiation and breast cancer risk in a large prospective cohort

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Purpose: We evaluated the association between residential levels of ultraviolet radiation (UV), a source of vitamin D, and incident breast cancer in a large prospective cohort. Methods: Using a spatiotemporal kriging model, we estimated residential UV exposure levels at the enrollment addresses (2003-2009) of breast cancer-free women ages 35-74 years participating in the Sister Study and living in the contiguous United States (N= 48,432). Cox proportional hazards models were used to estimate adjusted hazard ratios (HRs) and 95% confidence intervals (95% CI) for the risk associated with an increase in UV exposure levels (mW/m2) categorized in quintiles. We examined the association for breast cancer overall (invasive and ductal carcinoma in situ) and stratifying by estrogen receptor (ER) status of the tumor. We considered effect modification by regular (≥ 4 times/week) supplement (multivitamin or vitamin D) use. Results: Over a mean of 10 years of follow up, 3,510 incident breast cancer diagnoses were reported. We found no evidence of an association between living in areas with higher levels of UV radiation and overall breast cancer risk (Quintile 5 vs Quintile 1 (Q5 vs. Q1), HR=1.00, 95% CI: 0.90, 1.11). Higher UV levels were inversely associated with the risk of ER- breast cancer (Q5 vs Q1, HR=0.74, 95% CI: 0.55, 0.99), but not ER+ (Q5 vs Q1, HR=1.04, 95% CI: 0.92, 1.18). For ER- breast cancer,

the inverse association was more pronounced in women who did not regularly take supplements (Q5 vs Q1, HR= 0.52, 95% CI: 0.28, 0.98) compared with those who did regularly take supplements (Q5 vs Q1, HR=1.00, 95% CI: 0.66, 1.51; p-for-heterogeneity=0.05). Conclusions: The findings from this study support a role for UV exposure and vitamin D in the etiology of ER- breast cancer.

Investigating Differences in Cancer Survival Among South Asian Americans: A Prospective Cohort Study from the Surveillance, Epidemiology and End Results (SEER) Program, 2001-2015

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Purpose of the Study: Research on South Asian Americans with cancer is limited, and much of it is many years old. The current study estimates cancer specific mortality and overall mortality among the South Asian American population for several cancer types, including leading cancers in both the United States and in South Asia itself, and compare these rates to Whites and other Asians to assess whether there are "disparities" in survival for specific cancers and, examine the extent to which any differences in survival can be explained by differences in demographic factors, socioeconomic factors, clinical features, or treatment type. Methods: This prospective cohort study used data from individuals diagnosed with cancer between years 2001 and 2015 from 17 registries in the Surveillance, Epidemiology, and End Results (SEER) Program (1969-2018), including individuals of South Asian background (n=18,909), other Asian backgrounds (n=220,931) and Whites (n=2,781,262). Hazard ratios (HR) and 95% confidence intervals (CI) of the association between race and mortality were estimated using multivariable cox regression models, adjusting for age, sex, marital status, year of diagnosis, state, stage, radiation, and chemotherapy. Results: South Asians were found to have lower odds of all-cause and cancer-specific mortality compared to Whites as well as other Asians for many cancers, except Oropharyngeal, where mortality is highest among South Asians. South Asians were found to have significantly lower cancer-specific hazard for stomach, colorectal, pancreatic, lung, breast and cervical cancers. All odds of mortality were lower when adjusted for insurance. Conclusions: South Asians and other Asians do have significant differences in outcomes, where most other than Oropharyngeal cancer show better odds of survival for South Asians. Oropharyngeal cancer is among the leading cancers in South Asia, and the majority of South Asians in the United States are foreign-born so it will be important to follow this group over time to see how trends change as later generations emerge.

An actionable needs assessment for adolescents and young adults with cancer: the AYA Needs Assessment & Service Bridge (NA-SB)

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Purpose. In the US, many of the 90,000 adolescents and young adults (AYAs) diagnosed with cancer each year do not receive services to address their full scope of needs. To facilitate a systematic and patient-centered approach to addressing the unmet needs of this underserved population, we developed the AYA Needs Assessment & Service Bridge (NA-SB), a patient-reported outcome measure (PRO) for use in routine clinical care. However, PROs are unlikely to address patient needs if they lack usability (i.e., patients/ providers find them difficult to use) or usefulness (i.e., they are not actionably linked to services that address identified needs). To optimize the usability and usefulness of NA-SB, we leveraged user-centered design (UCD), an iterative process for intervention development based on patient and provider engagement. Methods. We conducted usability testing, including a survey and cognitive interviews with AYAs, to identify usability/usefulness issues with an existing tool- the Cancer Needs Questionnaire Young People (CNQ-YP). Then, we engaged AYA providers in concept mapping to inform our grouping of needs into "follow-up domains" based on the service they should trigger. Finally, our study design team, comprised of provider and AYA representatives, reviewed study data during a prototyping workshop to generate NA-SB. Results. Survey (n=70) and cognitive interview participants (n=5) identified many usability/usefulness issues with the CNQ-YP (e.g., length, missing content, etc.) that informed PRO revisions made during the prototyping workshop. The design team used concept mapping data (n=26) to group needs into 9 follow-up domains. Ultimately, our UCD process yielded NA-SB, a usable 57-item PRO which assesses AYAs' physical, psychosocial, and practical needs. Importantly, the grouping of items by follow-up domain creates an intuitive and actionable link between needs and services, facilitating NA-SB's usefulness in practice. Conclusion. NA-SB has the potential to improve AYA care by allowing cancer programs to tailor service delivery to the individual needs of AYAs. Furthermore, the UCD approach we used to develop NA-SB can help optimize the usability and usefulness of PROs for addressing the unmet needs of other underserved populations.

Estimation of contributing factors to racial disparities in epithelial ovarian cancer survival

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Purpose of Study: Using multiple mediation analysis we sought to determine why African- American women have poorer ovarian cancer survival compared to White women. Methods: We examined data from the Ovarian Cancer in Women of African Ancestry (OCWAA) consortium which harmonized questionnaire-based data on 1,075 African-American women and 3,272 White women with ovarian cancer from seven U.S. studies. We first selected potential mediators and confounders by examining the associations between each variable and both race and survival and then incorporated these variables into a sequential multiple mediation analysis. We used multiple imputation and bootstrapping to fit and pool natural effects models with counterfactual exposures and survival times. In order to distinguish the effect of race through mediators and otherwise, we implemented log-normal accelerated failure time and Cox proportional hazards models. Results: In OCWAA, 67.8% (n=729) of African-American women and 69.7% (n=2,282) of White women were deceased. The hazard ratio for African-American women compared to White women was 1.29 (95% CI=1.15-1.46). In our final model, mediators of this disparity in survival included college education, nulliparity, smoking status, body mass index, diabetes, diabetes/race interaction, postmenopausal hormone (PMH) therapy duration, PMH duration/race interaction, PMH duration/age interaction, histotype, and stage. These mediators explained 46.4% (95% CI=30.9-60.0%) of the overall racial disparity in ovarian cancer survival, and histotype/ stage and PMH duration accounted for the largest fraction. Conclusions: Nearly half of the disparity in ovarian cancer survival between African-American and White women is explained by education, lifestyle factors, diabetes, PMH use, and tumor characteristics. Our findings suggest a role of several potentially modifiable factors in ovarian cancer survival disparities. Further research to uncover additional mediators and potential avenues of intervention to reduce this disparity is warranted.

Improving Survey Response Rates Among Patients at a Cancer Center During a Global Pandemic

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This study evaluated approaches for recruiting patients at a cancer center to an electronic survey about their experience with the COVID-19 pandemic. Eight groups (n=2,750 patients total) were contacted via email to complete a 15-minute survey. Groups consisted of: 1) a detailed email only, 2) a brief email only, 3) a mailed letter and brief email, 4) a mailed letter, small prize in the envelope, and brief email, 5) a mailed postcard and brief email, 6) a brief email and \$10 gift card, 7) a mailed letter, brief email and \$10 gift card, and 8) a mailed postcard, brief email, and \$10 gift card. Patients were considered eligible if they had a valid email address, were seen at the cancer center since January 1, 2015, had English as a preferred language, a last known vital status of alive, an address inside the cancer center's catchment area, and were between 40 and 89 years old. Patients were over sampled for Hispanic ethnicity and African American race, then randomly sampled. Response rates were evaluated overall, by race/ethnicity, gender, time since visit to the cancer center and age. Multiple logistic regression was used to assess the odds of completing the survey. 259 patients (9.4%) completed the survey across all pilot groups. Response rates varied by pilot group, ranging from 2.6% response for a detailed email only, to 18.4% response for a brief email, postcard and gift card. The latter group was also among the highest for response rates among Hispanics (25.6%) and Non-Hispanic/Non-White patients (15.9%). In a multivariate model adjusting for race, ethnicity, age, and gender, we found those who received a gift card had 1.86 times (95% CI: 1.40-2.48) higher odds of completing the survey than those who did not. Additionally, those who received a postcard or letter compared to those who only received an email had 1.46 times (95% CI: 1.05-2.04) higher odds of completing the survey. In our study of cancer patients seen at a major cancer center, prompting potential study participants with a letter or postcard before an email improved response rates. Further including a gift card increased response rates, particularly for underrepresented minorities. Future analyses include evaluating response rates by insurance status and cancer type.

E-cigarette use and future health of our youth: Results of a community-based cancer needs assessment

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Although tobacco use is the leading cause of preventable death and disease, 40% of adults in the US are not routinely asked or counseled about their tobacco use during outpatient and primary care visits; fewer are asked about e-cigarette use and other new tobacco products. As part of an assessment of cancer prevention needs in the catchment area of a large New York City cancer center, we gathered information related to cancer screening, social determinants of health, and lifestyle behaviors that included the use of e-cigarettes. Participants included adults diagnosed and/or treated for cancer (n = 563) and patients who received primary care through our ambulatory care network (n = 241) in the past 3 years. Surveys were distributed by email between May and December 2019. Of the 804 surveyed, 11.2% (n = 90) reported having ever used e-cigarettes. E-cigarette use was highest among those 18-39 years (75.6%) compared to 21.1% of those 40-64 years and 3.3% of those \geq 65 years (p <0.001) and was also significantly more common among current smokers (55.6% vs. 12.4% former, 7.9% never smokers, p<0.001), those who binge drink alcohol often/ very often (32.7% vs. 18.9% never/rarely, p=0.001), have \geq 1 smoker in the home (38.5% vs. 8.0% for none, p<0.001) and are LGBTQ+ (23.1% vs. 10.5% heterosexual, p=0.02). After controlling for sociodemographic factors, e-cigarette use was associated with age <40 years (odds ratio [OR] 3.42, 95% confidence interval [CI] 1.78-6.57), current smoking (OR 3.63, 95%CI 1.52-8.68) vs. former or never; often/very often binge drinking (OR 2.98, 95 %CI 1.21-6.02) compared to never/occasional binging; and ≥ 1 cigarette smoker in the home (OR 4.26, 95%CI 2.29-7.94). Our findings indicate that e-cigarette use is commonly accompanied by frequent binge drinking among young adults and other negative health behaviors and exposures that increase cancer risk. Not only should providers routinely query patients about tobacco use, including the use of e-cigarettes, and alcohol consumption, but this study indicates that Cancer Centers are uniquely positioned to impact future cancer incidence and mortality by educating youth and young adults in the community about the health risks associated with co-use of cigarettes, e-cigarettes and alcohol.

Cancer Prevention Research During a Pandemic: The Impact of Social Media Advertising

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Background: The impacts of COVID-19 can be found everywhere; however, little is known on how pandemics affect cancer-related research. Efficient participant recruitment in clinical trials is imperative to the validity and generalizability of research findings. The goal of this study is to examine differences in participant recruitment in a smoking cessation clinical trial that utilized social media advertisements pre and post-COVID-19. Methods: Recruitment rates were examined pre-COVID-19 (July 2019-February 2020) and during COVID-19 (March 2020- July 2020). Participants were recruited using Facebook and Instagram ads. Eligible participants consisted of 18-40-year-old, premenopausal, female individuals who smoke and intended to quit smoking within 30 days. Recruitment was a three-step process: (a) an initial online eligibility screening survey, (b) a telephone eligibility interview, (c) and, if eligible, an informed consent and baseline surveys on REDCap. Results: Recruitment ran for approximately 61 weeks prior to COVID-19 and 22 weeks during. The pre-COVID-19 time frame produced more recruitment numbers for the initial online eligibility screening survey (n=1424 vs. n=598). Pre-COVID-19, of the 1424 who completed the eligibility screening, 9.41% (n=134) completed the phone screen compared to during COVID-19, where of the 598, 9.87% (n= 59) completed the phone screen. For final enrollment, of the 134 who completed the phone screen pre-COVID-19 59% (n= 79) completed the informed consent and baseline surveys, compared to 66.1% of 59 (n= 39) during COVID-19. Race, ethnicity, and age differences between the two time periods were negligible. The pre-COVID-19 average monthly recruitment cost was approximately \$398.71 while during was \$3,703.39. The cost per participant pre-COVID-19 was approximately \$70.66 while during was \$474.79. Discussion: While COVID-19 may have impacted participants' ability to continue or enroll in a study, factors such as online transitions, social media, and funding have helped some cancer researchers continue their work. The COVID-19 time frame recruited half the participants of the pre-COVID time frame despite being approximately seven times shorter which was in large due to the increased amount of monthly advertisement spending.

Health Care Access Measures Associated with Palliative Care Use Among Gynecological Cancer Patients: an analysis of the 2016 National Cancer Database

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Background: Palliative care can improve quality-of-life and extend survival of cancer patients, however, it is underutilized. Our objective was to evaluate the associations between healthcare access (HCA) measures and palliative care utilization among gynecological cancer patients. Methods: We used data from the 2016 National Cancer Database and included patients with metastatic (stage III-IV at diagnosis) ovarian, cervical, and uterine cancer patients deceased at last follow-up (n=124,729). Palliative care was defined as non-curative treatment and could include surgery, radiation, chemotherapy, and pain management or any combination. HCA measures examined include insurance type, distanceto-care, and cancer treatment facility type. We evaluated associations of HCA measures with palliative care use overall and by race/ethnicity using multivariable logistic regression. Results: The majority were non-Hispanic (NH)-White (74%), ovarian cancer patients (74%), and 24% survived less than 6 months. Only 5% of deceased patients with ovarian, 11% with cervical, and 12% with uterine metastatic cancer utilized palliative care. Compared to those with private

insurance, uninsured patients with ovarian (aOR:1.62, 95% CI:1.35-1.94) and cervical (aOR:1.41, 95% CI:1.21-1.64) cancer were more likely to use palliative care. Medicaid insured patients with ovarian cancer (aOR: 1.83, 95% CI:1.56-2.14) and cervical cancer (aOR: 1.35, 95% CI:1.20-1.52) were more likely to utilize palliative care. Patients with ovarian (aOR:0.59, 95% CI:0.49-0.72) or cervical cancer (aOR:0.79, 95% CI:0.65-0.97) who reside over 45 miles from their provider were less likely to utilize palliative care than patients living within <2 miles. Compared to ovarian cancer patients treated at comprehensive community cancer programs, patients treated at academic/research programs were less likely to utilize palliative care (aOR: 0.73, 95% CI: 0.60-0.88). When stratified by race/ethnicity, the associations between HCA measures and palliative care utilization were largely consistent. Conclusion: Palliative care is underutilized among metastatic gynecologic cancer patients. Insurance type and distance from provider to patient may influence palliative care use among metastatic gynecological cancer patients.

Differences in HPV vaccination rates between pediatric, adolescent, and young adult (AYA) cancer survivors and a non-cancer comparison sample

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Purpose: Vaccinations for the human papillomavirus (HPV) can reduce susceptibility of pediatric, adolescent, and young adult (PAYA) cancer survivors to HPV-related subsequent cancers. We report on differences in HPV vaccination rates among a Utah-based cohort of survivors and a comparison sample without cancer. Methods: Eligible participants had record of a primary care visit at one of two large healthcare systems in Utah during study follow-up: 2006-2016. We used vaccination records from two large healthcare systems, a statewide vaccination record system, and an all-payer claims database linked to cancer registry records. HPV vaccination initiation (1 dose) and completion (3 doses) were compared between cancer survivors (N=1,581) and an age and sexmatched comparison group without cancer (N=4,522) from 2006-2016. Individuals were aged 9-21 years old at cohort entry. Mixed-effects Poisson regression was used to estimate incidence rate ratios (IRRs) and 95% confidence intervals (CIs) for initiation and completion. Models were stratified by sex, race, parental education, rurality and insurance at cohort entry. Results: Overall, initiation/completion was 17%/5% for survivors and 20%/7% for the comparison. Relative to the comparison sample, cancer survivors were less likely to initiate the HPV vaccine (IRR=0.8, CI:0.73-0.97). In the stratified models, initiation and completion rates were lower for survivors compared to the comparison sample across many demographic groups. The most severe disparities in both initiation and completion were seen in male and Hispanic survivors. Male survivors were

less likely to initiate HPV vaccination (initiation: IRR=0.7, CI:0.56-0.89). Hispanic survivors were less likely to initiate (IRR=0.5, CI:0.31-0.72) or complete (IRR=0.5, CI:0.27-0.89) HPV vaccination. Conclusion: PAYA cancer survivors are less likely to initiate their HPV vaccination series than their non-cancer counterparts. Survivors who are male or Hispanic showed the highest risk for failing to initiate or complete the HPV vaccine. Targeted interventions should be directed at PAYA survivors to raise rates of HPV vaccination with particular care taken to include and target male and Hispanic survivors.

Opportunities and Challenges for Creating Sexual and Gender Minority Cancer Health Equity: Patient and Caregiver Perspectives from a Qualitative Pilot Study

Kano M, Adler Jaffe S, Rieder S, Burgess E, Guest, D, Hurwitz A, Warren B, Pandhi N, Myaskovsky L

Purpose of the Study: Estimates of up to 1,000,000 Americans with a history of cancer identify as lesbian, gay, bisexual, or transgender (i.e. Sexual and Gender Minorities (SGM)). SGM populations experience disproportionate risks for, and rates of, anal, breast, cervical, colorectal, endometrial, lung, and prostate cancers, as well as cancers affecting transgender persons who have undergone sex-reassignment procedures. This pilot study documents how SGM patients and their informal caregivers experience diagnosis, treatment, and the lasting effects of cancer. Based on in-depth patient and caregiver interviews, we explore to what degree this cancer journey is influenced by SGM identities, and seek to understand how interdependence between SGM patients and caregivers effects stress. The goal of this research is to design a multilevel intervention to improve SGM patient health outcomes, cancer care, and enhance supports for informal cancer caregivers. Methods: We are currently documenting the cancer and survivorship care needs of 25 dyads of SGM cancer patients and their caregivers (n=50) using qualitative interviews to gain insight into physical, psychosocial, cancer, and SGM specific issues they experience. Results: Preliminary results from this on-going pilot reveal patient and caregiver apprehension when entering cancer care. Feelings including anxiety, medical mistrust and trauma are linked to previous healthcare interactions and/or experiences of stigma and discrimination. Even so, dyads interviewed are optimistic about improving SGM cancer care, and offer suggestions for intervention development including: 1) patient and caregiver messaging and self-advocacy; 2) oncology staff and provider cultural training and communications regarding sexuality and function; 3) caregiver inclusivity; and 4) clinic and system level representation and policy. Dyads also discuss COVID-19 as an influence in current cancer treatment and recovery. Conclusions: Although patient/caregiver dyads interviewed to date are satisfied with care received, our participant number remains too small

to cover a full range of patient/caregiver experiences. Data collected clearly points to understudied and underdeveloped areas in cancer care that must be addressed to create SGM cancer equity.

Metabolic Health Phenotype and Risk of Cancer in the Utah Obesity Cohort Study

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Purpose: Body mass index (BMI) may misclassify obesity-related cancer risk since metabolic dysfunction can exist at any BMI. Whether weight loss improves metabolic health may also be heterogeneous. We measured the association of metabolic dysfunction, independent of obesity, and metabolic response to surgical weight loss, with risk of cancer. Methods: In the Utah Obesity Study, a large prospective cohort of gastric bypass (N= 418) and non- surgical patients with severe obesity (N=737), clinicodemographics and metabolic health parameters were measured at baseline, 2-years (post-weight loss in the surgery group), 6 and 12-years. We classified participants into metabolic health phenotype (metabolic syndrome (MetS) (>=3 Adult Treatment Panel III criteria) per obesity class (obese I/II (BMI >=30 & <40 kg/m2), III/IV (BMI >= 40 & <50 kg/m2), or V+ (BMI >= 50 kg/m2)), and measured changes in metabolic syndrome criteria from baseline to 2-years on a continuous scale in the bariatric surgery group (>=10% improvement, yes/no). We determined their associations with cancer incidence using logistic regression, adjusting for age, sex, % weight change from baseline, and study group. Results: Participants were predominantly female, white, middle-aged (45+/-9 years), and morbidly obese (BMI 45.9+/-5 kg/m2; % fat 52+/-3%). All groups with MetS had elevated risk of cancer compared with normal/overweight individuals without MetS. Although results were non-statistically significant, within obesity classes, those with MetS versus without MetS had higher cancer risk (e.g., obese I/II without MetS OR=1.15 (0.24, 5.5); obese I/II with MetS 1.61 (0.24, 10). Those who did not improve MetS criteria after surgical weight loss by >=10% had higher risk of cancer compared with those who did see improvements (OR=1.28, 95% CI 0.18, 5.85 at 6-years; OR=1.59, 95% CI 0.21, 8.27 at 12-years). Wide confidence intervals suggest follow-up in a larger cohort. Conclusions: Metabolic dysfunction, independent of obesity, and metabolic non-response to surgical weight loss were not associated with cancer risk. A follow-up study in a larger cohort is ongoing.

Association between Marital Status and HPV Vaccination Recommendation: A National Survey of Obstetrician/Gynecologists

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Purpose: To evaluate differences in obstetrician/gynecologists' (OB/GYN) recommendation of HPV vaccination for postpartum patients by patient age, parity, and marital status. Methods: U.S. OB/GYNs completed a survey that included 8 clinical vignettes featuring a postpartum patient eligible for HPV vaccine. The case studies were identical except for patient age (23/33 years old), parity (1st/3rd child), and relationship status (married/unmarried). Providers were asked how likely they were to recommend HPV vaccine to each patient from 0 (definitely would not) to 100 (definitely would). Results: The 224 providers were 69% White, 56% male, and 55% practiced in suburban clinics. Providers were more likely to recommend HPV vaccine to younger vs older patients. The highest recommendation was for the 23 yearold, unmarried patient having her 1st child (m=84.6/100), with the lowest score for the 33 year-old married patient having her 3rd child (m=53.1/100). However, providers were significantly more likely to recommend HPV vaccine to an unmarried patient than to a married patient, regardless of age/parity. The largest difference was for a 23 year-old having her 1st child. If that patient was unmarried, the recommendation score was 83.1, compared to 64.5 if that same patient was married (p<0.0001). This held true across age groups. For those having their 1st child, there was no difference between a married 23 year-old and an unmarried 33 yearold (68.5 vs. 69.4; p=0.90). Similarly, for those having their 3rd child, there was no difference between a married 23-year old and an unmarried 33 year-old (64.5 vs. 68.2; p=0.45). Conclusions: When examining these findings, it is important to note that the 23-year-old patient is recommended for catch-up HPV vaccination and the 33-year-old is not. While providers in our study recommended the vaccine more for younger patients, marital status was a more important driver of recommendation. Providers may be using marital status as a proxy for risk of HPV infection, basing their recommendation on perceptions of a patient's risk of exposure. However, marital status may not be a good indicator of whether a woman would benefit from HPV vaccine. Additional education and training on HPV vaccination guidelines may be beneficial for OB/GYNS.

Adolescent physical activity and breast cancer risk before age 50 years: findings from the Prospective Family Study Cohort (ProF-SC)

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Purpose of the study: We previously found that physical activity in adulthood is associated with reduced risk of breast cancer (BC) for women across the spectrum of absolute BC risk, including women under age 50 years and those with BRCA1 and BRCA2 pathogenic variants. In this study, we evaluated the impact of adolescent physical activity on BC risk before age 50 years. Methods: We used data from the Prospective Family Study Cohort (ProF-SC), which is enriched for BC family history. Women reported by baseline questionnaire their average levels of moderate and strenuous physical activity during adolescences (12-17 years), which we converted to total metabolic equivalents and categorized into quintiles after adjusting for baseline age. We conducted attained age analyses until 50 years using multivariable Cox proportional hazards regression to evaluate associations in 19,499 women (1,532 with BRCA1 and BRCA2 pathogenic variants) who were enrolled within 2 years of their first primary BC diagnosis or had no personal history of BC at baseline (pseudo-incident cohort). Results: There were 3,033 women (424 with BRCA1 and BRCA2 pathogenic variants) diagnosed with BC before age 50 years in the pseudo-incident cohort (50% estrogen receptor (ER)+, 28% ER-, 22% missing ER status). In models stratified by decade of birth and adjusted for race/ethnicity, education, and study center, women in the highest versus lowest quintile of age-adjusted adolescent physical activity had a 15% reduced risk of BC before age 50 years (HR=0.85, 95% CI=0.75-0.95; p-trend=0.046). Adolescent physical activity was associated with ER+ BC (Q5 vs. Q1: HR=0.83, 95% CI=0.70-0.98; p=0.045), but not ER- BC (HR=0.91, 95% CI=0.71-1.14; p-trend=0.686). Adolescent physical activity was not associated with BC risk before age 50 years for women in the pseudo-incident cohort with BRCA1 and BRCA2 pathogenic variants, but an association was found when we restricted to those affected with BC before baseline (n=726; HR=0.64, 95% CI=0.45-0.91; p-trend=0.042). Conclusion: Unlike the association we previously found for adult physical activity and BC risk, which was observed irrespective of ER status, the association of adolescent physical activity with BC risk before age 50 years appears to be specific to ER+ BC.

High urinary thromboxane B2 associates with lethal prostate cancer in African American men and inversely correlates with aspirin use.

Kiely M, Milne G, Minas TZ, Dorsey TH, Tang W, Smith CJ, Cook MB, Yates C, and Ambs S

Purpose: We assessed the role of thromboxane A2 (TXA2) in the development of lethal PC and the potential benefit of aspirin for prevention of lethal PC in African American men through inhibition of TXA2 synthesis. Method: TXA2 is unstable so we measured its corresponding primary metabolite, urinary thromboxane B2 (TXB2), to examine the relationship of TXA2 with PC. TXB2 was measured in cases (977) and controls (1022) from the NCI-MD PC Case Control study using a mass-spectrometry-based assay. TXB2 levels were modeled into low (≤median) and high (>median) levels. Results: We observed increased TXB2 levels in cases and an inverse relationship between levels of TXB2 and aspirin use in both cases and controls. For cases who used aspirin, the odds of having high TXB2 were reduced when compared to non-users (OR 0.46 95%CI, 0.34-0.61). This observation remained significant when stratified by race/ethnicity (AA: OR 0.36 95%CI, 0.23-0.54; EA: OR 0.58 95%CI, 0.38-0.88), indicating significant inhibition of TXB2 formation by aspirin, most notably in AA men. Further analysis showed that high TXB2 is associated with a PC case status in AA men (OR 1.44 95%CI, 1.08-1.93) but not EA men (OR 1.07 95%CI, 0.83-1.93), indicating increased TXA2 synthesis in AA men with PC compared to AA men without the disease. Also, men with high TXB2 were more likely to be diagnosed with metastasis compared to men with low TXB2 (OR 4.27 95%CI, 1.48-12.29), indicating more aggressive disease for cases with high TXB2. Furthermore, high TXB2 was associated with all-cause mortality (HR 1.56 95%CI, 1.05-2.33) and PC mortality (HR 4.02 95%CI, 1.46-11.07; SHR 2.89 95%CI, 1.03-8.11) in AA men only. Our findings indicate a distinct association between TXA2 and PC outcomes in AA men. Conclusion: Aspirin use inversely associates with high urinary TXB2. This is of clinical interest as we report that increased TXB2 associates with PC in AA men, with aggressive PC, and with PC death which disproportionally affects AA men. These findings are consistent with our previous findings that aspirin may reduce lethal PC in AA men and highlights the potential benefit of aspirin for prevention of lethal PC in this high-risk group of men through inhibition of TXA2 synthesis.

Randomized trial of precision prevention materials to improve short-term primary skin cancer prevention activities among Hispanics

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PURPOSE: To determine whether provision of MC1Rbased precision prevention materials influences primary skin cancer prevention behavior in Hispanics. METHODS: Hispanic participants were recruited from eight clinics in Tampa, FL and Ponce, PR. DNA from saliva was sequenced at the MC1R locus. Participants were block-randomized within MC1R higher-risk and average-risk groups into the intervention arm (MC1R genotype, precision prevention materials) or standard arm (generic prevention materials). At baseline, we collected information on demographics, phenotypic characteristics, health literacy and numeracy, family history of skin cancers, and familism. Information on reported hours of weekday and weekend sun exposure, frequency of sun protection behaviors, numbers of sunburns, and frequency of intentional outdoor tanning were obtained at baseline and at three months. Separately within MC1R risk groups, we conducted multivariate linear regression to examine the effect of the precision prevention intervention on each 3-month outcome, adjusting for the baseline outcome measure. Intervention moderation was assessed by adding an interaction term between the moderator and study arm. RESULTS: We randomized 920 participants, and 493 (53.6%) completed the 3-month survey. We did not find evidence of an intervention effect for any outcome measure among either average- or higher-risk participants. Although phenotypic characteristics moderated the intervention effect on several outcomes (p's<0.05), there was no consistent pattern. Familism moderated the intervention effect on weekend sun exposure among average- risk participants (p=0.01); the intervention increased weekend sun exposure for those with above-median familism scores and decreased it for those with below-median scores. CONCLUSIONS: In this Hispanic study sample, we did not find any main effects of our precision prevention intervention, which may be attributed, in part, to our modest power to detect small differences. Although skin phototypes did not moderate intervention effects, other traits, such as freckling, hair and eye color, did, warranting further exploration. Lastly, future studies may want to explore familism and how this social construct may affect sun behavior.

Examining the association between immune biomarkers and pubertal maturation

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Purpose: Bidirectional communication between the immune and hormonal systems mediates pubertal timing and thus, breast cancer risk. However, limited studies assess the associations between immune biomarkers and pubertal maturation. We examined immune marker profile across the pubertal window and the association between immune biomarkers and the age of onset of pubertal timing. Methods: We used the multiethnic, multisite LEGACY girls' cohort (New York, Ontario, Pennsylvania, and Utah) and examined a panel of 21 cytokines and chemokines (e.g., MIP1ß, TNFa) in a sub-cohort of 92 girls who had a first available blood biospecimen prior to the age of onset of menses and had at least 2 blood biospecimens. Median smoothed line and bean plot visualizations found potential trends in biomarker expression level by age. Time-to-event (TTE) graphs described biomarker levels pre- and post- breast development as defined as Tanner Stage 1 (T1) compared to T2 or higher. Using the corresponding measures from the first available biospecimen, we generated a correlation matrix including the biomarker, age, and BMI for-age-percentile. Parametric Weibull models assessed each biomarker and age of onset of breast development adjusted for age, BMI, and the interactions for age*BMI and age*biomarker. Results: The multiethnic cohort (70% non-Hispanic White, 18% Hispanic, 5% non-Hispanic Black, 3% Asian, and 3% other races/ethnicities) were on average age (standard deviation) 8.4 (1.4) and 89% were <85th BMI percentile at the first available biospecimen. There were 257 observations with 23% of girls having 4 or more observations. We observed an inverse trend between MIP1ß and TNFa and age. TNFa recapitulated this trend upon visualization of the TTE graphs and further decreased after breast development. Overall, the immune biomarkers were closely correlated to each other but were inversely associated with age and BMI-percentile. Weibull models suggested TNFa was associated with a later age at breast development (Hazard Ratio 0.93 (95% Confidence Interval 0.86, 1.00)). Conclusion: Confirming previous studies, TNFa may be associated with the age of onset of breast development. We will conduct quantile regression to confirm findings and replicate models for pubic hair development and menarche.

Measuring cancer awareness in Africa: Considering cultural relevance of measures including the Cervical Cancer Awareness Measure

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Purpose: To present breast and cervical cancer awareness measures used in Africa with discussion about cultural relevance of each. Lessons learned from translation and administration of the Cervical Cancer Awareness Measure (CCAM) in Ethiopia are shared. Methods: The CCAM, a reliable and valid tool for measuring awareness of cervical cancer, was created in the United Kingdom, and translated to Amharic and Afan Oromo for use in Ethiopia. The measure contains 22 questions about risk factors (n=11) and signs/ symptoms (n=11) of cervical cancer. It was administered to various cadres of health workers (n=772) at eight government health facilities in Ethiopia using a questionnaire. Open- and close-ended items were qualitatively analyzed to explore the cultural relevance of CCAM constructs. Results: Participants preferred culturally relevant terms such as "early marriage" and "polygamy marriage" to describe risk factors like early sexual debut and having a partner with multiple sexual partners. Participants interpreted questions about sexual behavior as pertaining to sex within marriage and cited cultural taboo around topics of pre-marital and extra-marital sex as reasons that these items, as originally written, may not accurately capture risk for Ethiopian women. Another item about parity as a risk factor needed to define what qualifies as "many" children. Furthermore, Ethiopians hold high societal value on motherhood and positively viewed high parity, which was not widely perceived as a risk factor. Conclusions: Few cancer awareness measures have been created with African populations in mind. During translation for use in Africa, some measures may lose meaning and cultural relevance. Additionally, the measures may not query culturally specific risk factors and behaviors such as being in a faithful polygamous relationship. In Ethiopia, administration of a translated CCAM revealed that participants preferred alternative terms to describe sexual behaviors they perceived as risky. Using culturally relevant terms and constructs in cancer awareness measures may contribute to greater health equity by more accurately measuring awareness. Such data can be used to develop culturally relevant cancer prevention interventions and tailor health communication.

Longitudinal assessment of HPV vaccine preventable types in a sample of sexually active African American women from ten U.S. cities

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Background: Chronic infection with high risk human papillomavirus (hrHPV) types is a necessary cause for cervical carcinogenesis. This study examined the prevalence of nonavalent vaccine preventable HPV types over three timepoints over four months among sexually active African-American women in the US. Methods: This sub-study obtained data for 80 of the 1365 women (18-25 years), enrolled in a randomized, open-label trial of home screening and treatment of asymptomatic bacterial vaginosis at high-risk for sexually transmitted infections conducted between 2008 and 2013. Participants were randomized to treatment or standard of care, and followed up every 2 months for 12 months. Dry vaginal swabs were collected at each study visit and stored at -70 deg Celsius. Stored vaginal swabs from the first 3 visits were tested for the nine vaccine preventable HPV types using quantitative PCR. Prevalence and associated 95% CI were assessed using R. Results: The average age of the participants was 21.5 (SD ±2.11) years, with 60% having ever been pregnant. Majority (71%) reported two or more sex partners in the prior year with 89% having unprotected vaginal sex and 45% having a new sex partner in the last year. Among the participants, 30% had any one or more of the 9 vaccine preventable HPV types at all three time points over a period of 4 months, 15% at two of any three visits, 19% at one of the three visits. About 36.3% were negative for all nine nonavalent vaccine types at all three time points. The most frequently detected nonavalent HPV vaccine types were 52, 58, 16, and 18. The prevalence of any nonavalent vaccine HPV types and hrHPV types was 63.8% and 58.8%, respectively. Those infected with a specific HPV subtype at baseline were more likely to remain infected or be re-infected with the same subtype at 2- or 4- months, except for HPV 18. Conclusions: Our findings suggest that HPV vaccination currently recommended for all unvaccinated persons through age 26 years, is likely to be more beneficial than previously thought as nonavalent vaccine was not available during the time these data were collected. More research is also needed to assess HPV type positivity longitudinally to determine if HPV vaccination may also be more protective than originally thought.

Impact of COVID-19 posttraumatic stress on psychosocial distress in rural cancer survivors

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Purpose: This study explored associations between posttraumatic stress due to COVID-19 and psychosocial distress in rural cancer survivors. Methods: Participants (n=195) in the Partnering to Prevent and Control Cancer (PPCC) study who had a working email address were sent an email invitation to complete an online questionnaire. Of the 195 cancer survivors contacted, 90 (46.2%) responded to the email invitation and completed questionnaires assessing posttraumatic stress due to COVID-19 and psychosocial distress (perceived stress, depressive symptoms, anxiety, and positive and negative affect). One-way analysis of covariance was used to explore associations between psychosocial distress scores in those with mild, moderate, and severe posttraumatic stress due to COVID-19, after controlling for gender, age, BMI and education. Results: Rural cancer survivors who completed the online questionnaire were mostly women (70%), non- Hispanic white (97.8%), in their 60s (M age=60.4±13.9 years), with overweight (M BMI=29.0±7.6 kg/m2), and college graduates (67.8%). Most participants were breast (37.8%) or prostate (23.3%) cancer survivors, not currently receiving treatment (93.3%), and were more than 12 weeks but less than 5 years post-treatment (93.7%). Over half (53.3%) of participants rated their health as very good or excellent, and 10.0% rated their health as poor or fair. Participants reported normal or mild (44.4%), moderate (31.1%), or severe (24.4%) posttraumatic stress due to COVID-19, and posttraumatic stress due to COVID-19 was associated with significantly greater perceived stress, depressive symptoms, anxiety, and negative affect and lower positive affect in rural cancer survivors after controlling for covariates (ps≤.002). Conclusions: Rural cancer survivors reported moderate to severe posttraumatic stress related to COVID-19, which negatively impacted their mental health. Findings highlight the potential of the COVID-19 outbreak to exacerbate the persistent long-term adverse effects of cancer treatment on psychosocial distress among rural cancer survivors. Psychosocial interventions are critically needed to reduce COVID-19 related distress among rural cancer survivors to promote health equity among this vulnerable, underserved population.

Telehealth Experiences of AYA Cancer Patients and Survivors During the COVID-19 Pandemic

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Purpose: To describe adolescent and young adult (AYA) cancer patients' and survivors' experiences with telehealth during the COVID-19 pandemic. Methods: Eligible participants were identified through the Huntsman Intermountain Adolescent and Young Adult Cancer Care Program which provides age-specific programming and patient navigation to AYA cancer patients and survivors in Utah and surrounding Mountain West states. Participants were emailed an online survey if they were currently age 18 or older and had been diagnosed with cancer between the ages of 15-39 years. We applied descriptive statistics to summarize demographics, comfortability with technology, access to reliable internet connection, and perceived quality of care while using telehealth. Results: AYAs (N=280) were an average of 29.4 years old at survey (range 18-58); 65.2% were female and 82.4% non-Hispanic white. Over half (54.2%) had received cancer treatment since March 2020. All participants reported owning a computer, tablet, and/or smart phone they could use for telehealth appointments. The majority (93.5%) reported almost always or always having a reliable internet connection. AYAs felt most comfortable having a telehealth appointment in their own home (96.4%); only 12.5% felt comfortable using telehealth at work. Since March 2020, (N=183) 65.4% had a health care visit moved to a telehealth platform due to COVID-19. Of those who recently moved to telehealth, 60.1% had an oncology visit, 33.9% had a primary care visit, and 31.1% had a mental health visit. Additionally over one-third (35.2%) reported the quality of their medical care had decreased since moving to telehealth. This was most commonly due to 1) troubles with audio, video, or connecting through telehealth platforms; 2) telehealth visits felt impersonal; and 3) participants felt providers more easily dismissed or did not fully address symptoms. Conclusions: Although AYAs are digital natives, over one-third of AYAs feel the quality of their medical care has decreased since moving to telehealth for COVID-19. Further research should explore medical provider training in using telehealth systems and encourage telehealth practices that help AYAs feel more supported and understood.

Receipt of Next-generation Genomic Sequencing among Patients with Metastatic Colorectal Cancer (mCRC) in a Real-World Cohort

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Purpose of the Study: Disparities in genomic precision medicine approaches, through molecular profiling or nextgeneration sequencing (NGS), by race/ethnicity, insurance, and poverty have been identified in lung cancer, but not mCRC. Our goal was to examine disparities in receipt of NGS in patients with mCRC. Methods: We used all-payer electronic health record (EHR)-derived de-identified data from the Flatiron Health database generated from routine clinical care across the United States. Our study population included 26,524 patients with mCRC during the years 2013-2020. In addition to date of NGS testing, the FH-EHR data include demographics (age, sex, and race/ethnicity), payer type, and Eastern Cooperative Oncology Group (ECOG) performance status. We conducted descriptive analyses and multivariable logistic regression analysis to identify correlates of receipt of NGS within 6 months of metastatic diagnosis. Results: Among the 26,524 people with mCRC, 45% (n=11,946) were women, 48% (n=12,732) had a Commercial Health Plan, and the majority were seen in a community practice (92%) vs academic hospitals. Over 70% of the patients were White, 12% Black or African-American (AA), and 14% Other. Thirty-three percent (n=8,821) of patients had documentation in the EHR of having received NGS. After simultaneously adjusting for other factors in the model, older age (ORper year increase: 0.97, 95% CI: 0.96-0.98) and Black/AA race (OR: 0.74, 95% CI: 0.68-0.81), compared to White, was associated with lower odds of receiving NGS testing. Conversely, female sex, better ECOG performance status, later calendar year, being seen in an academic practice, and having a Commercial Health Plan were associated with greater odds of receiving NGS. Conclusions: Our findings indicate that NGS is not received uniformly by all patients with mCRC. Future analyses will incorporate receipt of individual molecular biomarker tests, as recommended by professional societies, as well as their results (e.g., KRAS, NRAS, BRAF, MMR/MSI), treatment information, and survival.

Exploring the Influence of Spirituality on the HRQoL and Loneliness in Hispanic Caregivers of Latinas with Breast Cancer

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Purpose: The purpose of this study is to evaluate the relationship between spirituality and loneliness on Health- related quality of life (HRQoL) in Hispanic Cancer Caregivers in the Support for Latinas with Breast Cancer & Their Intimate and Family Partners Study, [American Cancer Society (ACS) RSG-12-120-01- CPPB]. Methods: Family caregivers of Latinas with breast cancer (N=234) provided self-reported spirituality and loneliness data (assessed by the Spiritual Well-Being Scale and the Social Isolation - Short Form 8a PROMIS Item Bank v2.0 scale) for this cross-sectional analysis. HRQoL was assessed using the Global Health Scale PROMIS v.1.0/1.1 scale. Mediation was tested using the Preacher and Hayes' approach to estimate direct and indirect (through the mediator of loneliness) effects of spirituality on HRQoL. Results: Caregivers had a mean age of 50.58 $y \pm 10.31$ y. The majority were married, female relatives to the survivor, and in self-described 'moderate health' HRQoL (mean: 12.68 ± 3.13), 'lower' loneliness (mean: 13.02 ± 6.31), and of 'higher' spirituality (mean: 54.65 \pm 9.42). At a bivariate level there was a significant association between spirituality and HRQoL such that the people with better spirituality reported better health. However, in the multivariate mediation model, there was no significant direct effect from spirituality to HRQoL (b = -.02, p = .73). There was a significant association between spirituality and loneliness (b= -.18, p= .0002) and between loneliness and HRQoL (b= -.17, p< .0001). These later two associations combined to form a statistically significant indirect effect of spirituality on higher HRQoL, via reduced loneliness (b= .03, 95% CI = .01- .05). Conclusions: Key findings suggest that higher self-reported spirituality is associated with higher HRQoL in Hispanic caregivers of breast cancer survivors, due in part to reduced loneliness among more spiritual caregivers. Additional research is needed to more robustly evaluate the impact of spirituality in Hispanic cancer caregivers and what role loneliness has in potentially influencing HRQoL.

Predicting breast cancer risk in a community-based sample of high-risk survey respondents

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Introduction: Identifying women with high risk of breast cancer is necessary for clinicians to deliver guideline-recommended cancer risk management care. Risk prediction models estimate individuals' lifetime risk of breast cancer. However, risk models have rarely been applied in community-based settings among women not yet receiving specialized care. Purpose: The aims of this study were twofold: (1) to apply three breast cancer risk models (i.e. Gail, Claus, IBISv7) to a community-based sample of racially diverse women and (2) to assess the feasibility and results of risk model estimates from self-reported information. Methods: A total of 4,502 women who self-identified as "high risk" for breast cancer were recruited from mainly non-clinical settings and screened for eligibility; 1,053 women (23%) were initially eligible & completed an online survey of information needed for the risk models. Risk models were used to estimate lifetime risk of breast cancer for each participant as applicable (e.g., Gail only applies to women \geq 35 years old without BRCA mutations). Final eligibility required meeting a threshold of \geq 20% lifetime risk per \geq 1 model. Descriptive statistics were used to assess the feasibility of running each model, proportion of high-risk women identified by each model, and the subsequent lifetime risk estimates. Results: A total of 717 women (68% of those initially eligible) met final eligibility criteria of ≥20% lifetime risk. Participants were 18-74 years of age, 65% White, and 35% African American. All women self-reported the information necessary to run at least one model; >90% had sufficient information to run >1 model. Most participants (76%) were identified as high risk by one model only; 73% of these were identified by IBIS, 2% by Claus, 0.85% by Gail. Twenty percent were identified by 2 models; 3.2% were identified by all 3 models. Conclusions: Risk reduction modeling is feasible using self-reported data from a community- based sample. Gail, Claus, and IBIS models have low levels of agreement in identifying racially diverse women at high risk of breast cancer. The IBIS model identifies high-risk women most often. Researchers and clinicians should consider the use of multiple models to avoid misidentifying potentially highrisk women.

Patient-Centered Factors Associated with Chemotherapy Communication in African-American and White Breast Cancer Patients

Mitchell KR, Sutton AL, Sheppard VB, Brown RF

Purpose: Patient-provider communication has significant implications on cancer care outcomes such as patient satisfaction, psychosocial health, and treatment adherence, but little is known about the patient centered factors (needs, values, beliefs, and attitudes) that influence chemotherapy communication between providers and African-American (AA) and White (W) breast cancer BC) patients. Methods: We performed descriptive statistics and conducted bivariate analyses between ratings of chemotherapy communication and the following: 1) care needs, 2) sociocultural values, 3) cancer and care beliefs, attitudes, and experiences, and 4) patient health and sociodemographic factors using survey data. Study variables with p < .25 were entered simultaneously into a linear regression model. Variables that demonstrated high collinearity and did not improve model fit were removed. Results: The final model (F(7,252)=7.302, p< .001) indicated that valuing authority versus relating to everyone the same (β =-.211, p=.004), low medical mistrust (β =-.018, p=.033), low perceived BC severity (β =.037, p=.019), and low perceived risk for chemotherapy (β =.051, p=.007) were associated with higher ratings of chemotherapy communication after adjusting for covariates. The R=.411, R2=.169, and the adjusted R2=.146. Aged less than 60 years (β =-.126, p=.089), a value for learning about life from the wisdom and knowledge of others versus personal experience (β =.180, p=.089), and having no racial discrimination experiences in healthcare (β =-.138, p=.070) lost statistical significance after being entered in the model. Conclusions: Patient's values for relating to others, and their cancer and care beliefs and experiences are significantly related to their treatment discussions and potentially their care outcomes. Future research should examine causal paths between these factors and determine best practices for efficiently eliciting such information during consultations and adjusting care accordingly.

Associations between breast cancer risk estimation and modifiable health behaviors in the Bright Pink Assess Your Risk population

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Purpose: Breast cancer risk assessment tools identify women at elevated risk due to family history or genetic susceptibility and account for self-reported modifiable health behaviors. Bright Pink, a Chicago-based nonprofit, developed the Assess Your Risk (AYR) tool using National Cancer Center Network criteria to estimate breast cancer risk through a user-friendly, online quiz. This study aims to examine associations between breast cancer risk assessment and health behaviors in the Bright Pink population. Methods: We included women (aged 21+) who completed the Bright Pink AYR versions 1.0 and 2.0 (2016-2018). We examined the associations between AYR breast cancer risk category (average, increased, or high) and health behaviors, including exercise (150 min/week), current smoking status, daily alcohol consumption (0, 1, or 2+ drinks/day), and body mass index (BMI). We also examined effect modification by age group and confounding by factors known to impact breast cancer risk. Results: The analysis examined 464,796 women, with slightly over half (53%) in the 21-30 age group. Compared to women in the AYR tool average risk category for breast cancer, women in the high-risk category had significantly greater odds of engaging in recommended exercise levels (Odds Ratio [OR] 1.23, 95% Confidence Interval [CI] 1.12-1.35) or 2+ alcoholic drinks/day (OR 1.32, 95% CI 1.18-1.48), but lower odds of BMI \geq 30 kg/m2 (OR 0.87, 95% CI 0.77-0.97). Women in the AYR tool increased risk category had greater odds of reporting current smoking (OR 1.21, 95% CI 1.19-1.24), 2+ drinks/day (OR 1.09, 95% CI (1.07-1.11), and a BMI ≥30 kg/m2 (OR 1.03, 95% CI 1.01-1.05) compared to the average risk category. Moreover, we identified statistically significant interactions by age group, with older women were less likely to exercise and drink >1 drink per day but more likely to have BMI ≥25 (p-trend by age<0.001; p-interaction<0.001 for all). Conclusions: Selfreported health behaviors differ by AYR breast cancer risk assessment categories. Knowledge of elevated breast cancer risk may lead to improved health behaviors among high-risk women, especially among the younger age groups. Future interventions must incorporate age-specific education on modifiable health behaviors into risk assessment tools.

Racial differences in continuity of care and aggressive end-of-life care among women dying with ovarian cancer in SEER-Medicare

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Purpose: End-of-life care for women with ovarian cancer is aggressive, and more aggressive for nonwhite women. However, whether continuity of care near the end of life reduces aggressive care remains unknown. The purpose of this study was to evaluate the association of care continuity with receipt of aggressive end-of-life care, and to explore differences by patient race. Methods: This study included women with ovarian cancer who are over age 66, died between 2007 and 2016, and had continuous Medicare coverage in the Surveillance Epidemiology and End Results (SEER)-Medicare data linkage. The Continuity of Care Index (COC) was calculated for outpatient evaluation and management visits in the year prior to death (excluding the final month when outcomes were assessed). Multivariable logistic regression models were used to estimate the associations between race and COC with aggressive end-of-life care in the last month of life including: hospice (no or late), hospital utilization (ED visits, ICU stay, multiple/terminal hospitalization) and treatments (chemo, invasive procedures, life extending procedures). Results: Among 6,472 women dying of ovarian cancer, the average COC score was 0.38, and COC distribution across tertiles differed by race (p<0.01), with NHB women having the largest proportion in the lowest tertile (39.7%), and Hispanic women having the greatest proportion in the highest tertile (40.5%). More than half of the women (51.7%) had at least one indicator of aggressive end-of-life care, with more aggressive care in Non-Hispanic Black (NHB) women (64.2%) compared to white women (50.1%) (P < 0.01). In race adjusted models, compared to women in the lowest COC tertile, those in the top COC tertile had lower odds of receiving a life extending procedure (adjusted OR 0.73 CI 0.59-0.89), invasive procedure (adjusted OR 0.68 CI 0.58-0.79), or having a stay in the ICU (adjusted OR 0.84 CI 0.72-0.97). Conclusions: Although higher care continuity was associated with lower odds of some aggressive end of life care, and care continuity differed across racial/ethnic groups, it was not sufficient to explain the higher odds of aggressive care seen among nonwhite women with ovarian cancer.

Gestational growth and risk of young-onset colorectal cancer

Murphy CC, Cirillo PM, Krigbaum NY, Cohn BA

Purpose of the study: To estimate the effect of gestational growth on risk of colorectal cancer (CRC), a cancer that is now increasing in young adults. Methods: The Child Health and Development Studies is a population-based cohort of women receiving prenatal care between June 1959 and September 1966, with deliveries through June 1967 (n=18,751 live births excluding neonatal deaths among 14,507 mothers). We examined four measures of gestational growth and risk of CRC in adult offspring: 1) maternal obesity, body mass index at the first prenatal visit; 2) total gestational weight gain, the difference between the last pre-delivery weight and weight at the first prenatal visit; 3) rate of early gestational weight gain, pounds gained per week through 32 weeks' gestation; and 4) birth weight, assessed with standardized scales at delivery (<2,000g vs. 2,000-3,999g vs. ≥4,000g). Incident cases of CRC in offspring were ascertained through 2018 by linkage with the California Cancer Registry. We used Cox proportional hazards models to estimate adjusted hazard ratios (aHR), with follow-up accrued from birth through CRC diagnosis, death, or last contact. We also examined effect modification of total weight gain by rate of early weight gain by including a statistical interaction term in the adjusted model.

Results: We identified 68 incident cases of CRC in offspring. Cases were diagnosed at ages 23 – 56 years (median age 50 years). Maternal obesity increased risk of CRC in offspring (overweight: aHR 2.21, 95% CI 1.25, 3.94; obese: aHR 2.45, 95% CI 1.08, 5.55). Rate of early weight gain modified the effect of total weight gain (p for interaction=0.01), suggesting discordant growth from early to late gestation increased risk of CRC in offspring (aHR: 5.20, 95% CI 1.51, 17.86). There was an elevated but not statistically significant risk associated with high (≥4,000g) birth weight (aHR 1.95, 95% CI 0.86, 4.38). Conclusions: Our results provide compelling evidence that events in utero may contribute to increasing incidence rates of CRC in young adults - more than 50 years after birth. Maternal obesity more than doubled risk of CRC in offspring. Gestational weight gain trajectories, which may be markers of fetal and placental development, similarly increased risk.

Sleep Duration and Mortality Among Breast Cancer Survivors in the Western New York Exposures & Breast Cancer (WEB) Study

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Objective: With prevalence estimated at >3 million breast cancer survivors in the US, investigating mortality risk factors in this group is of public health importance. Sleep and breast cancer incidence have been studied. However, research among breast cancer cases regarding sleep and survival remains limited. Methods: We examined breast cancer cases in a population-based, prospective cohort study, the Western New York Exposures and Breast Cancer Study with mortality status follow-up using the National Death Index through December 31, 2018. Cox proportion hazards ratios (HR) with 95% confidence intervals (CI) were used to estimate risk of overall and breast cancer specific mortality (BCS) for self-reported usual sleep duration categories (short, recommended, or long, \leq 5, 6-8, or ≥ 9 hours (h), respectively) after adjustment for age, race, education, body mass index (BMI), menopausal status, ages at first birth & menopause, pack-years of smoking, tumor stage, estrogen (ER) and progesterone receptor (PR) status. BMI split at the median (27.4 kg/m2), menopausal status and ER and PR status were examined for effect modification. Results: Participants were followed for a median of 22 years. While there were no significant associations of sleep duration with overall survival (OS), there was a non-significant trend toward higher BCS risk for women who sleep ≥9 compared to 6-8 h/night (HR: 2.29, 95% CI: 0.99-5.32). Among postmenopausal women, ≤5 h of sleep was associated with a 2.9-fold higher BCS risk; there was no association of long sleep with BCS or OS. Among those with BMI \leq 27.4 kg/m2, short sleep was associated with higher BCS risk; long sleep was associated with higher risk of BCS and OS. Sleep

was not associated with BCS or OS for women above the median BMI. Long sleep was associated with OS among ER+ but not ER- cases; however, interaction was not significant. For BCS risk, there was a significant interaction of ER status and sleep duration (p=0.02), but CIs included the null. Conclusions: We found some evidence that sleep duration is associated with BCS and OS, particularly among women who are postmenopausal, with BMI \leq 27.4 kg/m2, and/or have ER+ tumors. Further exploration of sleep duration and prognosis following breast cancer diagnosis is warranted.

Airborne metals, polycyclic aromatic hydrocarbons and terminal duct lobular involution of the normal breast

Niehoff NM, Keil AP, Jones RR, Fan S, Gierach GL, White AJ

Purpose: Terminal duct lobular units (TDLUs) are the site where most breast cancers arise and lack of TDLU involution is associated with increased breast cancer risk. Our prior work demonstrated that particulate matter <2.5 microns in diameter (PM2.5) was associated with reduced involution. In this study, we sought to identify the association for other airborne pollutants, including metals and polycyclic aromatic hydrocarbons (PAHs). Methods: Measures of TDLU involution (TDLU count, span, and acini/TDLU) were enumerated in the breast tissue of 1,904 women who donated a normal sample to the Komen Tissue Bank. Women's residence at donation was geocoded and linked to the National Air Toxics Assessment database to estimate concentrations of airborne PAHs and 9 metals (antimony, arsenic, cadmium, chromium, cobalt, lead, mercury, nickel, & selenium) near their residence. We evaluated associations per interquartile range (IQR) increase and with quartile-based categories of pollutants. Zero-inflated negative binomial regression was used to estimate adjusted relative rates (RRs) and 95% confidence intervals (95% CIs) for TDLU counts. Ordinal logistic regression was used to estimate adjusted odds ratios and 95% CIs for tertiles of TDLU span and acini/TDLU. Quantile g-computation was used to examine the joint impact of a simultaneous quartile increase in all 10 pollutants with TDLU count. Results: Antimony was associated with higher TDLU counts non-monotonically across categories (e.g. 2nd vs 1st category RR= 1.24, 95% CI: 1.06-1.46; 4th vs 1st category RR=1.09, 95% CI: 0.93-1.29) and per IQR increase (RR=1.02, 95% CI: 1.00-1.04). There was little evidence supporting an association for other individual pollutants and TDLU count, and none were related to acini/TDLU. A few pollutants (PAHs, arsenic, lead, mercury, nickel, and selenium) were associated with reduced odds of longer TDLU span. The joint association for the 10 pollutants was negligible (RR=0.96, 95% CI: 0.89-1.05). Conclusions: This work provides little support for an association between airborne metals and PAHs, individually or as a mixture, and measures of TDLU involution. Other airborne pollutants, such as

PM2.5, may be more relevant for early histologic changes in breast tissue related to breast cancer.

2020 Impact on Research Productivity Survey: The Geographic Management of Cancer Health Disparities Program (GMaP)

Norbeck C; Fleisher L; Cadet DL; Cole S; Houston JF; Kano M; Kay EM; Oakley EJ; Sims ZD; Vines AI

Purpose: The Geographic Management of Cancer Health Disparities Program is a national program funded by the National Cancer Institute's Center to Reduce Cancer Health Disparities (CRCHD). The seven GMaP regions use a multipronged engagement approach to increase recruitment/retention of diverse investigators and to strengthen professional development. This survey was designed to assess if and how the events of 2020 (COVID, racial or political unrest, others) impacted current research productivity, applications for future funding, and publication submission. Methods: A REDCap survey was sent out to each of the GMaP regional listservs in October 2020 and was completed by 150 researchers by early stage (71, 50.0%) and established investigators (36, 25.4%). Half (51%) identified as a non-white race, and 17.8% identifying as Hispanic or Latino. Responses were recorded via 6 point Likert scale (No Impact, Minimal, Neutral, Significant Impact, Work Stoppage, Expanded Scope) and allowed for qualitative responses. Summary of Results: COVID impact on current research was "Significant or Work Stoppage" for how it affected institutional support (53.1%), access to communities for research (71.5%), and personal challenges (60.2%). Systemic racism/social unrest was identified as Significant Impact to 49%, along with 53.7% by local/national politics. About 1/5 (18.2%) indicate they plan to submit for future funding on the next grant cycle, and 43.2% still plan to apply but at an undetermined date. Qualitative responses provided profound examples of the difficulties researchers have experienced in 2020. Respondents indicated that pilot awards (65.4%) and research support awards (60.3%) are the best methods to support their career development. Recommendations: The GMaP network with its regional approach is well placed to continue to support the career development needs of their researchers. Throughout 2020 GMaP has quickly pivoted to opening their trainings and workshops to national audiences, adapting their travel awards to research support/ registration awards, and supplying virtual opportunities for networking. These data further inform and enhance specific GMaP program offerings, and help us better advocate for our researchers at the institutional and national level.

Circuit, interval-based aerobic and resistance exercise improves metabolic syndrome in Black and Hispanic cancer survivors

Norris MK, Dawson J, Dieli-Conwright CM

Purpose: Metabolic syndrome (MSY) is associated with increased risk of cardiovascular disease, type 2 diabetes, and recurrence among cancer and is 1.5 times more common in Black and Hispanic adults compared to Caucasian counterparts. In addition, Black and Hispanic adults are more likely to be obese and physically inactive, accelerating the risk for developing MSY. Exercise mitigates MSY, however, few studies have focused on minority cancer survivors. The purpose of this pilot study was to examine the effects of a 16-week circuit, interval-based aerobic and resistance clinical exercise intervention on MSY in Black and Hispanic survivors of breast, prostate and colorectal cancers. Methods: Sedentary, overweight or obese (BMI>25.0 kg/m2) breast, prostate or colorectal cancer survivors who self-identified as Black or Hispanic were randomized 2:1 to exercise (n=30) or usual care (n=10). The thrice weekly 16-week intervention included supervised, periodized moderate-vigorous aerobic (65-85% VO2max) and resistance (65-85% 1-repetition maximum) exercise performed in a circuit, interval fashion. MSY variables (blood pressure, waist circumference, triglycerides, glucose, and high-density lipoprotein-cholesterol) and related biomarkers (insulin, insulin resistance- HOMA-IR, C-reactive protein- CRP) were measured at baseline and post- intervention (week 17). Within and between group differences were assessed by repeated measures ANCOVA. Results: Participants were 66 ± 10.4 years old, overweight (78%), Hispanic (55%), Black (45%), female (60%) and had undergone chemotherapy + radiation therapy (75%). At baseline, 80% of the patients had MSY. Adherence to the intervention was 90% and post-intervention assessments were available on 100% of participants. Post- intervention, all MSY variables, insulin, HOMA-IR and CRP improved significantly in the exercise group when compared to usual care (p<0.01). Conclusions: A 16-week circuit, interval-based aerobic and resistance clinical exercise intervention improves MSY in Black and Hispanic survivors of breast, prostate and colorectal cancers. Clinical exercise interventions for minority cancer survivors may be an integral strategy to offset poor cardiometabolic health and prevent worsening comorbid conditions.

Novel breast cancer susceptibility identified in African ancestry consortia under linkage peaks

Ochs-Balcom HM, Preus L, Du Z, Elston RC, Teerlink CC, Palmer J, García-Closas M, Huo D, and Haiman C on behalf of the AABC, AMBER, ROOT, and GAME-ON BCAC/DRIVE OncoArray consortia investigators, and the Ghana Breast Health Study investigators.

Purpose. Continued expansion of genome-wide association studies into diverse populations is critical for an improved understanding of both shared and unique contributors to breast cancer risk. Here, we performed a genetic association study guided by a priori linkage findings from African ancestry pedigrees to identify novel and potentially ancestry-specific associations. Methods. We performed a fixed effect inverse variance weighted meta- analysis in four African ancestry breast cancer consortia and the Ghana Breast Health Study (a total of 9,241 breast cancer cases and 10,193 controls). We examined associations with overall breast cancer, as well as ER- positive and ER-negative subtypes in three genomic regions that approximate a 1 LOD drop for significant linkage peaks (3q26-27, 12q22-23, 16q21-22.1), including SNPs with MAF>0.001 and imputation quality score ≥0.6 (193,132 SNPs in total). We used region-wide significance thresholds determined a priori based on linkage equilibrium information to identify the approximate number of independent SNPs (tests) in each region. Results. On chr12q, we identified two significant associations for overall breast cancer which are 2.2 kb apart and in perfect LD in YRI (rs1420647, A allele, OR=0.87, p=2.50x10-6; rs12322371, A allele, OR=0.88, p=3.15x10-6), and one significant association for ER-negative breast cancer (rs770066000, T allele, OR=1.67, p=3.51x10-6). The two chr12 SNPs associated with overall breast cancer are intron variants in CFAP54. On chr3, we identified two significant associations with ER-negative breast cancer (rs184090918, A allele, OR=0.27, p=1.23x10-5; rs76959804, A allele, OR=0.28, p=1.77x10-5) that are 2 kb apart and also in perfect LD in YRI. The significant chr3 SNPs are upstream to open chromatin ENSR00000710716, which is actively regulated in mammary tissues. The closest flanking genes are RPL7L1P8 upstream and LINC02031 downstream. On chr16, we identified one association with ER-negative breast cancer (rs34147411, T allele, OR=1.62, p=8.82x10-6), an intron variant in DUS2. Conclusion. Our study, guided by prior linkage evidence, identified novel associations with overall and ER- negative breast cancer in an independent dataset comprised of women of African ancestry that warrant further study.

Evidence of Stage Shift in US Lung Cancer Diagnosis, 2009-2016

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Purpose: In 2013, the U.S Preventive Services Task Force (USPSTF) began recommending lung cancer screening for current and past smokers. Lung cancer screening may lower lung cancer-related deaths, but attendance may not be consistent across smokers from different races or geography. In this study, we investigate if the implementation of the USPSTF guidelines resulted in a shift toward earlier stages at diagnosis (stage shift) by race and geographical regions. Methods: Using data from the Surveillance, Epidemiology, and End Results (SEER) for lung cancers diagnosed 2009 to 2016, we calculated and compared annual proportions of early and late stage diagnoses before and after 2013, stratified by patient race, and SEER geographical regions. Results: In the Northeast region from 2009 to 2012, Whites had low percentage margins in comparison to Blacks (1.28% increase in Whites vs 8.35% decrease in Blacks). From 2013 to 2016, Whites in the Northeast experienced higher proportions of early stage diagnoses in comparison to Blacks(15.26% increase vs 10.96% increase, respectively). In the Southeast region, Whites initially had lower proportional changes from 2009 to 2012 in comparison to Blacks (1.66% increase vs. 5.28% decrease, respectively) and from 2013 to 2016, Blacks experienced higher proportions in comparison to Whites who had similar proportions in the early stage. (7.55% increase in Whites vs 18.57% in Blacks) However, Blacks continued to experience higher proportions of patients diagnosed in later-stage diagnosis in comparison to Whites as seen in early-stage lung cancer diagnosis. Conclusions: Lung cancer diagnosis has been decreasing over time, and stage shift is evident in some populations, however not uniformly by race and geographical regions. Blacks are still more likely to be diagnosed at a later-stage in comparison to Whites, pointing to problems with uptake of screening guidelines.

Identifying small geographic areas for educational radon interventions

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Purpose: Educational interventions are currently the only approved means to improve radon testing in Utah, a state with a low smoking and high radon emission potential. This ecologic analysis describes characteristics of census block groups that are priorities for targeted educational interventions about radon testing. Methods: A database of 20,368 household radon tests collected from 2001 to 2017 by a public health agency were linked to radon soil emission

potential maps and demographic data from the 2010 census. We identified priority intervention census block groups, defined as block groups with $\leq 5\%$ of homes tested and $\geq 75\%$ of homes on high radon potential soils. We fit log-linear Poisson models to calculate associations between blockgroup level demographic characteristics and the rate ratios (RR) for the proportion of homes on high radon soils and home radon testing. We calculated odds ratios (ORs) using logistic regression models to identify demographic characteristics of priority intervention block groups, defined as having $\leq 5\%$ of homes tested for radon and $\geq 75\%$ of homes on high radon soil. Results: In our data, 40% had radon greater than the health standard of 4 pCi. Within block groups, the proportion of homes built on high radon soils was positively correlated with a greater percent of of Asian residents (RRper10%=1.34, 95% CI=1.31-1.37) and owner-occupied housing units (RRper10% =1.15, 95% CI=1.15-1.15). The proportion of homes tested for radon was inversely correlated with the percent of Hispanic (RRper10%=0.71, 95% CI=0.69-0.74) and Native American residents (RRper10%=0.18, 95% CI=0.14-0.24). Characteristics correlated with designation as a priority intervention block group were a greater percent of persons aged <25 years (OR per10%=1.35, 95% CI=1.06-1.70), single female heads of household (OR per10%=1.93, 95% CI=1.04- 3.57), and owner occupied housing units (OR per10%=1.24, 95% CI=1.12-1.36). Conclusions: Culturally and linguistically appropriate resources for radon testing among block groups with a great percent of Hispanics, Native Americans, female heads of households, and persons aged <25 years. Providing radon test kits and additional support to these populations and home owners may also be needed.

Fit2Thrive: Optimization of a mHealth Physical Activity Promotion Intervention for Breast Cancer Survivors

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Purpose: The benefits of moderate and vigorous physical activity (MVPA) for breast cancer survivors (BCS) are well established. Yet, most are insufficiently active. Most existing MVPA promotion interventions are resource- intensive and include numerous components delivered together simultaneously in a package. This makes it difficult to evaluate the relative importance of each component. Fit2Thrive used Multiphase Optimization Strategy (MOST) methodology to determine the effect of five remotely-delivered mobile health (mHealth) intervention components on MVPA in a nationwide sample of BCS. Methods: Breast cancer survivors [n=269;Mage=52.5(SD=9.9)] were given a core intervention (Fit2Thrive self- monitoring app and Fitbit) and were randomly assigned to five intervention components set to on/off in a factorial experiment: telephone

support calls, deluxe Fit2Thrive app (i.e. goal-setting and newsfeed features), Fitbit buddy, online gym, and tailored text messages. The intervention was designed to increase BCS' MVPA to meet MVPA guidelines (i.e. ≥150 minutes/ week). Fit2Thrive was delivered over 12-weeks, and MVPA was measured via accelerometry at baseline (T1), 12- (T2) and 24- (T3) weeks. Main effects and interaction effects for all components at each time point were examined using an intention to treat mixed-effects model. Results: Overall, BCS increased MVPA by 58.3 (95%CI=44.2-72.4;p<0.001) min/ wk [MT1=94.8; MT2=153.1).There was a 26.6% increase in the percent of BCS meeting MVPA guidelines at T2 (T1=16.2%; T2=42.8%; p<0.001). Effects were maintained but attenuated at 24 weeks follow-up [MT3=121.9 min MVPA; 12.5% increase in BCS meeting MVPA guidelines; ps<0.001). While the "on" level of each component resulted in an increase in MVPA, none of these improvements was superior to the "off" levels for any component under consideration. Conclusions: Systematically testing the effect of each intervention component on MVPA suggests the Fit2Thrive self-monitoring app and Fitbit represent a promising, lowcost, scalable strategy for increasing MVPA in BCS in the short term. Future research should evaluate these components in a randomized trial and determine how to more effectively use technology to maintain MVPA.

Racial and Ethnic Disparities in Preoperative Wait Time for Renal Cell Carcinoma Treatment

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PURPOSE OF THE STUDY: Kidney cancer is one of 10 most common cancers in the United States. While studies have documented the effects of surgical wait time (SWT) on mortality, little is known about factors that may influence SWT. The purpose of this study was to identify determinants affecting time to surgical treatment for renal cell carcinoma (RCC), which is disproportionately affecting racial/ethnic minority groups. Methods: Medical records of patients diagnosed with RCC who underwent nephrectomy between 2010 and 2020 at Banner-University Medical Center Tucson were reviewed. Patients with a prior cancer diagnosis were excluded. SWT was defined as the date of diagnostic imaging examination (e.g., CT and MRI) to date of nephrectomy. Logistic regression analysis was performed to identify factors associated with longer SWT (>77 days). Results: A total of 365 patients were included. The median SWT was 77 days (interquartile range 44 to 133). Mean age was 59.1 (SD=12.1) and 57.8 (SD=12.4) in patients who had a shorter SWT (\leq 77 days) and a longer SWT, respectively. Patients with Medicaid coverage had 3-fold increased odds of experiencing a longer SWT (OR, 3.35; 95% CI, 1.60-6.99). Medicaid coverage was highest among Hispanic Americans (HAs), representing 46.8% of coverage compared to 13.5% in non-Hispanic

Whites (NHWs). Private insurance coverage was highest among NHWs, representing 25.8% of coverage compared to 22.2% and 9.7% of HAs and Native Americans, respectively. Among HAs, older age (\geq 50) was associated with longer SWT, but not among NHWs. Lastly, HAs had increased odds of a longer SWT compared to NHWs in patients with early-stage RCC (TNM Stage I or II) (OR 2.38, 95%, CI, 1.14-4.96). Conclusions: Multiple factors, such as access to care, cardiac co-morbidities, performance status, stage of presentation, and cultural values, may impact the SWT. The disparities in the SWT among racial/ethnic minority groups warrant further investigations.

Cancer-related Nutrition and Meal Planning Content on Pinterest

Raber M, Warner EL, Leroy G, Crane T, Badger T, Basen-Engquist K

Purpose: The Internet is an increasingly popular source for recipes, dietary advice and nutrition information. Specialized dietary information for cancer patients is prevalent, but little is known about the scope and characteristics of online nutrition and recipe content tailored for cancer patients. We describe cancer-related nutrition and meal planning content on Pinterest, a popular social medium for recipe sharing. Methods: In June 2020, a random sample of 103 "pins" was selected and analyzed. Pins were identified using simple search phrases (e.g., "recipes for cancer"). Each pin was coded for 58 variables including pinner characteristics (e.g. individual, business), general descriptors (e.g. type of image, audience target), health claims (e.g. reduces/treats cancer) and presence of a disclaimer. Coding was undertaken by two independent coders (k=0.74). Descriptive and bi-variate statistics were calculated to describe the pin characteristics. Results: Cancer-related nutrition and recipe content was most commonly shared by individuals (67%) and businesses (21.4 %). Nearly half (48%) of content sites were for-profit and 34% were selling a product on the page. Health claims were common, with sites claiming to prevent (41.8%) or treat cancer (27.2%), specifically mentioning antioxidants, anti-inflammatory foods, herbs, macro and micro-nutrients. Claims regarding the alleviation of certain cancer-treatment related symptoms were less common overall (<24%). Although, most pins did not contain citations (63%), academic sources were sometimes used to legitimize claims. The majority of cancer prevention claims (78%) and treatment claims (52%) cited academic sources (both p<0.01). Only 36% of claims had a health-related disclaimer. Conclusions: Recipe and nutrition content related to cancer is common online. Sites make a variety of health claims, often without a disclaimer, which may influence dietary choices during treatment and lead to cancer patient confusion. Understanding the scope and characteristics of online cancer nutrition content may support the development of

more informed nutritional counseling for the modern cancer patient. Given our findings, interventions to promote nutrition/eHealth literacy in this population may be warranted.

Initial reactions to a low-touch digital weight loss pilot intervention across 4 diverse cohorts.

Raber M; Le T; Strong LL; Daniel CR; Basen-Engquist K

Purpose: The goal of this study was to examine initial participant perceptions of a low-touch digital weight loss pilot intervention across four diverse cohorts at the University of Texas MD Anderson Cancer Center including Mano a Mano (adults of Mexican descent), Project CHURCH (African American church members), High Risk Breast Cancer (women at increased cancer risk), and MERIT (women aged 25-80 who receive annual mammograms). Methods: Approximately 10 members of each cohort received a sixteen-week weight loss intervention based on the Diabetes Prevention Program. The program includes emailed lessons, motivational text messages, a Fitbit, and a Wi-Fi-connected scale. Post-intervention surveys collected data on perceived program effectiveness, helpfulness of specific intervention components, and satisfaction with different intervention characteristics using 5 point Likert scales. Open-text questions inquired about what participants did and did not like about the program. Results: Mean scores for all variables were high across cohorts, indicating satisfaction with the program. With regard to perceived effectiveness, scores were >3.44. Concerning the helpfulness of lesson materials, mean scores were all >3.25. With regard to helpfulness of the Fitbit, Aria scale and associated Fitbit app/ website, all mean scores were >3.75. Most participants across cohorts indicated the program was an appropriate length, and text messages, email, and phone contacts were adequate. Participants from the Mano a Mano cohort tended to demonstrate slightly higher satisfaction across all variables. Open-text responses revealed participant interest in more contact (checking in directly with study staff) and program tailoring (specific examples, considerations for special populations), and overall satisfaction with the Fitbit and Aria devices and text messaging elements. Conclusions: Participant perceptions were similar across the different cohorts, suggesting the digital weight loss program may be broadly applicable in these populations. However, participants in all cohorts expressed some areas for improvement including the need for more contact with health coaches and increased tailoring. These changes may increase cost in future studies.

Missed Opportunities for HPV Vaccination among Childhood Cancer Survivors

Ramsay JM, Kaddas HK, Ou JY, Kepka D, Kirchhoff AC

Purpose: Childhood cancer survivors are at higher risk of human papillomavirus (HPV)-related cancers than adolescents without cancer, yet their HPV vaccination uptake is lower. We evaluated whether adolescent survivors of childhood cancer are at higher risk of missed opportunities for HPV vaccination than adolescents without a cancer history. Methods: Using electronic health records from two major health care systems, a statewide insurance claims database, data from an immunization information system, and cancer registry records, we identified vaccination events for childhood cancer survivors. Eligible survivors were diagnosed 2000-2016 at ages 0-9 (n=337) and were matched by birth year and sex to a sample without cancer from the general population (n=803). Follow-up was bounded by the dates claims data were available: 2013-2016. Individuals were aged 9-12 years at start of follow- up. Missed opportunities were defined as health care encounters where the HPV vaccine was not administered but another vaccine was received. Mixed effects Poisson regression estimated the rate of missed opportunities per person-year of follow-up and 95% confidence intervals by vaccine encounter type (adolescent/ catch-up or flu shot only). Results: Survivors had more HPV vaccine missed opportunities than the population sample: 70.2% vs 62.1% of vaccine encounters (p<0.001). Survivors were 24% more likely to have missed opportunities at an encounter where they received other adolescent vaccines (incidence rate ratio [IRR]=1.24, 95% CI: 1.06-1.44) and 19% more likely to have missed opportunities at flu shot encounters (IRR=1.19, 95% CI: 1.10-1.28). Significantly more missed opportunities were observed at both adolescent/ catch-up and flu shot encounters for survivors who were female, Non-Hispanic White, Other Race/Ethnicity, resided in urban areas, privately insured, and whose first vaccine during study follow-up was at age 9-10 years. Among survivors, those treated with chemotherapy had more missed opportunities than those who did not receive chemotherapy (IRR=1.28, 95% CI: 1.01-1.62). Conclusions: Childhood cancer survivors are at significantly higher risk of HPV vaccine missed opportunities than adolescents who have never had cancer at both adolescent/catch-up and flu shot encounter.

Disparities in Distress Screening in Lung and Ovarian Cancer Patients

Rohan EA, Gallaway MS, Huang GC, Ng D, Stachon K, Boehm JE, Samarasinha R

Purpose of the Study: Lung and ovarian cancer patients have relatively low 5-year survival rates and experience high levels of distress due to their diagnosis. We examined the extent to which ovarian and lung cancer patients received Commission on Cancer (CoC)-mandated distress screening (DS) and whether disparities exist based on diagnosis, sociodemographic factors, or facility geography (urban/rural). Methods: This mixed-method study included a quantitative review of DS documentation and follow-up services provided using existing electronic health records (EHRs) and qualitative inquiry of healthcare practitioners to ascertain facilitators and barriers to implementing routine DS. We enrolled 21 CoC-accredited facilities across the United States and examined EHRs of 2,258 survivors (1618 lung cancer survivors, 640 ovarian cancer survivors) diagnosed in 2016 or 2017. Qualitative data collection consisted of interviews and focus groups of health care practitioners at four sites. Results: Documentation of DS was found in half (52%) of the EMRs reviewed. Disparities existed across race/ethnicity, cancer type and stage, and facility characteristics. White and African American survivors were screened for distress at higher rates than Hispanic/Latino survivors. Ovarian cancer patients, those diagnosed at later stages (stage 3 or 4), and patients in rural facilities were screened for distress more often. Health care practitioners identified administering DS across several points in time, using patient-administrated methods, and enhancing EHR infrastructure to better collect, record, and retrieve DS data as ways to improve the DS process. Conclusions: Despite the mandate for routine DS in CoC-accredited cancer care facilities, gaps remain in how many and which patients are routinely screened for distress. Additional focus on and outreach to lung cancer patients, Hispanic/Latino patients, and patients at urban facilities may be considered. These study results may be used to enhance the quality of cancer care delivery at facilities participating in this study and may be translated to other settings to increase the number of cancer patients overall who are screened for distress to ensure they receive appropriate psychosocial care.

Use of Dietary Supplements by Breast Cancer Survivors

Rossi AM, Hauer M, Funk JL

Purpose: To identify natural product (e.g. fish oil), vitamin, or mineral dietary supplements (DS) in current use by breast cancer (BC) survivors. Methods: An online survey was developed to self-report current DS use; breast cancer history, including concurrent treatments; and primary influences on DS choice. Recruitment focused on social media advertising. Results: The majority of participants completing the survey to date (N=1,224) were non- Hispanic Caucasian (87.9%) females (100%) living in the US (96.5%), 62 +/- 10 years of age, with an average age at diagnosis of 57 +/- 11 years. Estrogen receptor and/or progesterone receptor-positive (ER+/PR+) tumors were the most commonly reported subtype (64.5%). At the time of the study, 72.2% of participants were undergoing active breast cancer treatment, with anti-estrogen hormone therapy (HT) being the most common (53.7%). Vitamin and/or mineral (VM) DS use was reported by 80.8%. Among those reporting VM DS use, vitamin D (83.9%), calcium (55.1%), multivitamin (47.4%), and vitamin C (34.8%) were the most prevalent. Health care providers (HCP) were a primary source of information for VM DS use (e.g. 89.0% of calcium users took it based on HCP recommendations). Natural product (NP) DS use was reported by 65.5%. Among these women, probiotics (31.8%), turmeric (29.2%), fish oil/omega- 3 (28.2%), melatonin (25.6%), and cannabis (21.6%) were the most prevalent. Primary sources of information for NP DS use varied. For instance, for turmeric, family/friends or internet/social media were primary sources (48.5%). DS use was 1.4- to 2.3-fold higher for all noted top DS in women with ER+/PR+ tumors (p<0.01), and trended higher for most DS among current HT users, reaching significance for vitamin D or calcium (1.7- or 2.0fold higher, respectively, p<0.001). Phytoestrogen use was rare (2.0%). Conclusions: While vitamin/mineral DS use was primarily driven by HCP recommendations, NP DS use by BC survivors was often based on recommendations of family, friends, and social media, with a prevalence 3-fold higher than for US adults. Because risks and benefits of NP DS are not well described and drug interactions are possible, open lines of communication between survivors and HCP about DS use is essential. Funding: UA Honors College

Effects of a DVD-delivered physical activity intervention on functional performance in cancer survivors

Salerno EA, Gothe NP, Fanning J, Peterson L, Colditz GA, McAuley E

Purpose: While site-based physical activity interventions successfully improve functional health during cancer survivorship, they remain costly and limiting for many. We previously reported on the benefits of a DVD-delivered physical activity program in healthy older adults that reached a 5,000 square mile radius. Here, we examine the intervention effects among cancer survivors in the original sample. Methods: Low active, older adults who self- reported a history of cancer (N=46) participated in a 6-month, home-based physical activity intervention. Participants were randomized to either the DVD-delivered physical activity program focused on flexibility, toning, and balance (FTB; n=22) or a healthy aging attentional control condition (n=24). Physical function was assessed by the Short Physical Performance Battery (SPPB), and physical activity was assessed via accelerometry. All measurements were taken at baseline, end of intervention, and at 12 and 24 months after baseline. Results: Repeated measures linear mixed models indicated a significant group by time interaction for the SPPB total score $(\beta=-1.14, p=0.048)$, driven by improved function from baseline to six months in the FTB group compared with worsened function in the control group. Similarly for the SPPB balance score, those in the FTB group had better balance at six months ($\beta = -0.56$, p=0.041). Over the follow-up periods, similar trends emerged for the SPPB total score; the group by time interaction from 0-12 months approached significance (β =-0.97, p=0.089) and was significant from 0-24 months $(\beta = -1.84, p = 0.012)$. No significant interactions emerged for other outcomes at either end of intervention or over the 12- and 24-month follow-up (ps>0.11). Conclusions: A DVD-delivered physical activity intervention designed for healthy older adults was capable of eliciting and maintaining significant functional improvements in the cancer survivors of the sample, with similar effects to the original trial. Importantly, the difference in group scores at six months represents a clinically meaningful difference of over one full point on the SPPB. These findings have important implications for the design and dissemination of an evidence-based physical activity program for cancer survivors beyond the clinical setting.

Colorectal cancer screening adherence and racial/ ethnic inequalities among the foreign-born associated with time living in the U.S.

Santiago-Rodriguez EJ, Shariff-Marco S, Gomez SL, Hiatt RA

Purpose of the study: Longer time lived in the US has often been associated with declining health outcomes among foreign-born (FB) individuals, as characteristics of longer-term residents better resemble their US- born than recently arrived FB counterparts. In this study, we evaluated the association between time lived in the US and colorectal cancer (CRC) screening adherence, and whether this relationship differed by race/ethnicity. Methods: We used data from the National Health Interview Survey for 2010, 2013, 2015 and 2018, the most recent years with available data. CRC screening adherence was defined according to USPSTF guidelines (50-75y). People with CRC diagnosis were excluded. Time in the US was defined as: US-born (reference), FB≥15y and FB<15y. Generalized linear models with Poisson distribution were used to calculate adjusted prevalence ratios and 95% confidence intervals. Sequential analyses were conducted adding demographics and survey year, socioeconomic information, healthcare variables, and US citizenship. Analyses were also stratified by race/ethnicity and accounted for the complex sampling design. Results were weighted to be

representative of the US population. Results: A total of 44653 participants (US-born, n=37787; FB≥15y, n=6003; FB<15y, n=834) were included in the study. Prevalence of CRC screening adherence was 63% overall, 64% for US-born, 55% for FB≥15y and 35% for FB<15y. In minimally adjusted models for all and among Hispanics and Asians, FB had lower adherence than US-born with FB<15y having the lowest adherence. Among Hispanics, adjusting for citizenship fully attenuated results with no significant differences between FB and US-born. Among Asians, some attenuation was observed in fully adjusted models, but the pattern remained. Among NHW and NHB, only FB<15y had lower adherence; these patterns remained in fully adjusted models with some attenuation. Conclusions: CRC screening adherence varied by race/ethnicity. Among Hispanics, citizenship attenuated lower adherence in FB. Among Asians, NHB and NHW, differences by time in the US remained in fully adjusted models, suggesting other factors may explain them. Culturally and ethnically targeted interventions should consider these potential explanatory factors to CRC screening adherence.

Discontinuation of survivorship care after head and neck cancer treatment

Seaman AT, Seligman KL, Al-Qurayshi Z, Nguyen KK, Buchakjian MR, Pagedar NA

Purpose: Little is known about those who discontinue follow-up care, a population who may benefit from continued engagement in care. Our objective was to characterize head and neck cancer patients who discontinue survivorship care with their treating institution and identify factors associated with discontinuation. Methods: Using our institution's cancer registry, we conducted a retrospective cohort study of patients diagnosed with in situ or invasive head and neck cancer between January 1, 2014, and December 31, 2016, who received cancer-directed therapy at the University of Iowa Hospitals and Clinics (UIHC). Eligible patients achieved cancer- free status after curative-intent treatment and made at least one visit 90+ days after treatment completion. The primary outcome was discontinuation of care, which we defined as a still-living survivor who has not returned to a UIHC cancer clinic for twice the recommended follow-up interval between completion of cancer treatment and the end of the study period (October 1, 2019). Demographic and oncologic factors were examined to identify associations with discontinuation. Results: We identified 449 patients meeting all inclusion criteria. Oral cavity was the most common primary site at 39.4% of patients, and 92.7% had invasive histology. The majority were men (70.2%); 61.0% were married or partnered, and 28.3% were classified as rural. One hundred eight (24.1%) of the 449 eligible patients discontinued follow-up care at UIHC during the study period. The mean time in follow-up for those discontinued treatment was 14.9 months. Factors associated

with discontinuation of care included unmarried status (p=0.043), longer driving distance to facility (p=0.021), and single-modality cancer treatment (p=0.00002). Rurality was not associated with discontinuation (29.1% vs 22.1% for urban residence, p=0.12), nor was age, gender, or payor status. Conclusions: Study results indicate that a notable percentage of head and neck cancer survivors discontinue care with their treating institution. Both demographic and oncologic factors were associated with discontinuation, pointing to potential interventions. Future research should investigate survivors' follow up patterns after discontinuation at treating institutions.

The Patient COUNTS Study: Patient Cancer OUtreach, Navigation, Technology, and Support

Shariff-Marco S, Oh D, Tsoh J, Wong C, Allen L, Chu JN, Bui H, Liew C, Cheng J, Fung LC, Gomez SL, Nguyen T

Purpose of the study: To reduce disparities and improve quality of life, the Patient COUNTS study leverages technology to provide Asian American cancer patients with accessible, culturally-relevant, and linguistically-appropriate navigation support and resources. Methods: With feedback from a Patient Advisory Council (PAC), focus groups and interviews with 17 cancer patients and caregivers, and an in-person pilot test with 26 cancer patients, we developed an online patient portal that enables Asian American patients with newly diagnosed colorectal, liver, or lung cancer to access virtual navigation and relevant resources in English, Chinese (Cantonese/Mandarin), and Vietnamese languages. Results: We identified 4 key emerging themes: 1) information unawareness/overload; 2) emotional support; 3) navigation needs; and 4) resource access. While some participants did not know who to ask or what to ask for regarding diagnosis or treatment, others were confused and overwhelmed by the amount of information from many sources. Receiving encouragement to fight cancer was described as crucial; family, friends, doctors, nurses or hospital staff were sources of emotional support. Although most participants were unfamiliar with navigation, after an explanation they thought it was very desirable. Lessons learned from the pilot are congruent with the recommendations from focus groups and PAC, which included providing information in native language and English on: symptoms and side effects management; palliative care and clinical trials for patients with endstage disease; and sensitive topics (e.g., stigma, dying) only when the patient asks. The pilot highlighted housing and food insecurity needs. Conclusions: Our formative research found a range of significant needs among Asian American cancer patients and suggestions for how to address them. This guided the development of our virtual patient navigation program to provide information on cancer, treatment, living with cancer, emotional well-being, and resources (access to health care, financial, transportation, housing,

food and nutrition, child/adult care). This will enable us to further identify key elements of an effective, sustainable, and scalable navigation program for Asian American cancer patients and their caregivers.

Evaluating outreach methods for the multi-target stool DNA test for colorectal cancer screening among a screening-eligible employer population

Shepherd M, Lecorps A, Harris-Shapiro J, Miller-Wilson LA

Purpose: Early detection of colorectal cancer (CRC) can significantly improve survival rates among patients. Despite compelling evidence of the clinical and economic benefits, adherence to CRC screening remains low. Increasing awareness among eligible individuals through various outreach methods may improve screening uptake. The objective of this study was to evaluate uptake of non-invasive multi-target stool DNA (mt-sDNA) by different outreach methods in an average-risk employer population. Methods: This was a retrospective observational study including CRC screening-eligible individuals aged \geq 50 years in two intervention arms employer health plan targeted outreach (by mail and phone) and provider-initiated outreach (face-to-face interaction). The study was approved by the Vanderbilt Institutional Review Board (IRB#192421). The mt-sDNA completion rate (proportion of individuals who return the mt-sDNA kit after it has been shipped to their home), proportion of patients who performed follow-up colonoscopy after a positive mtsDNA test, and time to follow-up colonoscopy were assessed. Results: A total of 167 mt-sDNA kits were shipped to eligible participants (aged 50-64 years) in the employer health plan targeted outreach arm. In the provider-initiated outreach arm, a total of 132 mt-sDNA kits were shipped to eligible participants (aged \geq 50 years). The mt-sDNA completion rate was significantly higher for the provider- initiated outreach as compared to the employer health plan targeted outreach (76.8% vs. 53.5%; p<0.001). While all patients aged 50-64 years with a positive mt-sDNA result received a follow-up colonoscopy in both outreach arms (6 patients in employer health plan targeted; 4 patients in provider-initiated), median time to follow-up colonoscopy was shorter among the employer health plan targeted outreach (55 vs. 136 days; p<0.05). Conclusions: Provider-initiated outreach was associated with a higher mt-sDNA completion rate as compared to the employer health plan targeted outreach approach among average-risk, CRC screening-eligible individuals aged 50-64 years. Having an established relationship and a sense of trust in the provider may play an important role in mt-sDNA screening completion.

Discerning patterns of death among bladder cancer patients across race and sex: A population-based database analysis

Shu TD, Schumacher FR, Conroy B, Ponsky LE, Mahran A, Bukavina L, Markt SC

Significance: A growing proportion of patients diagnosed with bladder cancer are dying from causes other than the primary malignancy. The aim of this study was to characterize cause of death among bladder cancer patients by race and sex, follow-up, and calendar time. Methods: We identified 160,141 patients diagnosed with bladder cancer in the Surveillance, Epidemiology, and End Results (SEER) database from 1975-2017. We calculated cumulative incidence of death due to seven causes (bladder cancer, COPD, diabetes, heart disease, external causes, other cancer, and other specified causes). We analyzed differences in mortality by race-sex subgroups (white men and women, black men and women, and Asian and Pacific Islander [API] men and women), length of follow-up, and calendar time. We used multivariable Fine and Gray competing risk models to compare risk of bladder cancer-specific mortality between race-sex subgroups, adjusting for age at diagnosis, year of diagnosis, rural/urban, stage, and histology. Results: Among the 160,141 bladder cancer patients, 19% died from bladder cancer (n=30,758), 50% died from other causes (n=79,248), primarily other cancer (27%) and diseases of the heart (22%), and 31% were still alive (n=50,135). Among those who died with less than 5 years of follow-up, bladder cancer was the most common cause of death for all race-sex subgroups. The 5-year cumulative incidence of bladder cancer death was highest among black women (64%). For patients with more than 5 years of follow-up, the most common cause of death was other cancer. The cumulative incidence of bladder cancer death decreased by calendar time (1975-1980: 26%; 2011-2017: 13%); however, the risk of dying from other causes increased. White women, API women, and black men and women had increased overall risks of dying from bladder cancer compared to white men when accounting for competing risks. Results were qualitatively similar among those diagnosed with localized disease. Conclusions: Among those diagnosed with bladder cancer, mortality from other causes, including diseases of the heart and other cancer, contributed a significant proportion to overall mortality. In addition, we found differences in cause- specific mortality by race-sex subgroups, follow-up, and calendar time.

Health-related quality of life is associated with fecal microbial composition in breast cancer survivors

Smith KS, Tissier EA, Bail JR, Morrow CD, Demark-Wahnefried W, Frugé AD

Purpose: To explore differences in fecal microbial composition between non-obese and obese female breast cancer survivors (BCS) enrolled in a clinical trial and associations between individual microbiota and health-related quality of life (QOL). Methods: A cross-sectional substudy was conducted using samples and data collected at baseline on BCS recruited from 2013-2014 to participate in a randomized controlled trial of a lifestyle intervention in the Birmingham, AL area. Measures included anthropometrics, QOL (Short Form Health-related QOL Survey-36 [SF-36]), and 16S rRNA sequencing of fecal samples. Participants were categorized by body mass index (BMI) into non-obese ($\leq 29.9 \text{ kg/m2}; n=38$) and obese (≥30.0 k/m2; n=32) groups. Differences in bacterial taxa between groups were assessed using Kruskal-Wallis one-way analysis of variance. Spearman and partial correlations explored associations between taxa and SF-36 subscales. Results: Most BCS (72.9%) were non-Hispanic white with average age of 61.6 (\pm 8.7) years. Non-obese BCS had a significantly higher relative abundance of Ruminococcus (p=0.003), Streptococcus (p=0.049), Roseburia (p=0.035), and Dorea (p=0.003), and a lower relative abundance of Pseudomonas (p=0.016) and Proteus (p=0.017). No differences were observed for SF-36 subscales between groups. Overall, Tissierella Soehngenia was negatively correlated with Bodily Pain and Vitality (ρ =-0.287, p=0.026; ρ =-0.302, p=0.02; respectively) and Proteus was positively correlated with Total Physical Health subscale (ρ =0.290, p=0.027). Physical Functioning, Vitality, and Mental Health subscales were negatively associated with Ruminococcus (ρ =-0.304, p=0.036; p=-0.361, p=0.012; p=-0.495, p<0.001) and Dorea (ρ=-0.318, p=0.028; ρ=-0.33, p=0.022; ρ=-0.388, p=0.006) abundance when controlling for BMI. Conclusions: Fecal microbial composition differed between obese and nonobese BCS, with associations between QOL and several microbial taxa. Several of these genera, previously identified as potentially beneficial, such as Ruminococcus, Roseburia, and Dorea, may also influence QOL in BCS. These results support further analyses to determine the role of individual microbiota in health-related quality of life and obesity in cancer survivors.

Medical Mistrust and COVID-19

Sutton AL, Deng Y, and Sheppard VB

Purpose: The COVID-19 pandemic has highlighted feelings of medical mistrust, particularly with regard to healthcare disparities and healthcare utilization. This study examined medical mistrust amongst some of the most vulnerable groups, such as cancer survivors, and identified correlates of medical mistrust. Methods: We developed a survey to understand the impact of the COVID-19 pandemic on cancer survivors' ability to access care and medical information, identify problems with meeting daily needs, and their perceptions of healthcare and of the government. The survey was disseminated, via Qualtrics, to cancer survivors and to individuals without cancer who served as a control group. For this analysis, medical mistrust, measured using the group-based medical mistrust scale, was the outcome. Covariates of interest included demographic factors (e.g. race/ethnicity), cancer status (yes/no; type), and trust in government. T-test was used to assess bivariate associations between covariates and medical mistrust by cancer status. Multiple regression was used to assess multivariate associations amongst all individuals and cancer patients only. Results: Of the 939 respondents, 624 (66.5%) had cancer. Most respondents were White (66.6%), > 41 years old (56.8%), and had at least a Bachelor's degree (49.73%). Compared to individuals without cancer, individuals with cancer were older (p=0.002); White (p<0.0001), and reported lower medical mistrust (p=0.016). In multivariate analysis, individuals who were 18-40 years old (vs. > 41 years old) (OR: 4.79, 95%, CI: 2.07 - 11.11; p=0.0003) and individuals with Hispanic or Latinx (vs. non-Hispanic) (OR: 3.72, 95%, CI: 1.17 - 11.178; p=0.026). Amongst individuals with cancer, younger age and Stages II and IV (vs. Stage I) were related to higher mistrust. Compared to White individuals with cancer, Black individuals were 6 times more likely (p=0.042) and Hispanic individuals were 9 times more likely (p=0.015) to report higher mistrust. Conclusions: Medical mistrust is high for younger individuals and amongst people of color. As the Hispanic and Black populations have suffered from disparities in outcomes as a result of COVID-19 and cancer, efforts to address mistrust in these populations are warranted.

Outdoor light at night and terminal duct lobular unit involution in the normal breast

Sweeney MR, Niehoff NM, Jones RJ, Fan S, Gierach GL, White AJ

Purpose of the study: Terminal duct lobular units (TDLUs) are structures in the breast where most breast cancers arise, and higher TDLU counts in background normal breast tissue is associated with a greater risk of breast cancer. Elevated outdoor light at night (LAN) has been associated with an increased breast cancer risk in some studies, but the biologic underpinnings of this relationship are not well defined, and its association with TDLU involution has not been studied. Methods: From 2009-2012, women aged 18-75 donated normal breast tissue samples to the Komen Tissue Bank and provided information on demographics, lifestyle factors, medical history, and their residential address at the time of donation. H&E-stained FFPE breast tissue sections from 1,904 donors were analyzed for metrics of TDLU involution, including the number of TDLUs, and, for women with ≥ 1 TDLU, median span and median number of acini/TDLU. Outdoor LAN from the 2010 U.S. Defense Meteorological Satellite Program high-dynamic range data was linked to geocoded participant addresses. Satellites provide annual nighttime ground-level illumination at ~1 km resolution, and composite images exclude moon luminance, cloud cover, and fires. Risk ratios (RRs) and 95% confidence intervals (CIs) for the association between LAN (quartiles and per IQR increase) and TDLU count were determined using zero-inflated negative binomial regression models. Odds ratios (ORs) and 95% CIs for the association between LAN, categorical TDLU span, and categorical acini/TDLU were calculated using ordinal logistic regression. Results: We found no association between outdoor LAN and TDLU counts (Q4 vs. Q1: RR=1.11, 95% CI: 0.91-1.36) or LAN and acini/TDLU (Q4 vs. Q1: OR=0.89, 95% CI: 0.60-1.32). An inverse association was observed with TDLU span (Q4 vs. Q1: OR=0.63, 95% CI: 0.43-0.91). Associations between an IQR increase in LAN and TDLU measures were similar. Conclusion: In this first study to examine LAN and histologic metrics of TDLU involution, LAN does not appear to be associated with TDLU count or acini/TDLU. The apparent inverse association between LAN and TDLU span requires further exploration. Future studies are needed to uncover mechanisms underlying the relation of LAN with breast cancer risk.

Adaptation to Digital Data Collection for Prostate Cancer Research during Covid-19 in Rural Alabama

Tipre M, Baity D, Bell D, Gullet P, Glover M, Hardy C, Baskin ML

Purpose: Prostate cancer screening (PCS) is marked by racial/ethnic disparities, particularly among African American (AA) men who are often diagnosed at younger age with advanced-stage disease. We proposed a qualitative study using group concept mapping (GCM) approach to understand the barriers and facilitators for PCS and develop best practices to improve PCS among AA men. GCM is a participatory and structured methodology for organizing a group's ideas around a specific topic or question. Stakeholders are tasked with brainstorming of ideas as a group, sorting and rating the ideas based on similarity and importance; and interpret the concept maps generated from analyzing the ideas. We offer critical reflections on conducting GCM on an online platform among AA men in Alabama amid COVID-19 crisis. Methods: County-based program coordinators recruited 112 AA men aged 35 to 70 years from an urban (n=47) and three rural counties (n=65) in Alabama; 50% of the men recruited were between 35 to 50 years. In addition, measures were taken to recruit transgender men in the study. Due to COVID-19 and social distancing measures, study procedures were changed from in-person data collection to virtual data collection. Study packages with instruction manual were mailed to the participants followed by multiple phone calls to encourage participation and manage technical problems. Results: Participants completing brainstorming session generated >100 statements. The level of interest and the quality of the data obtained was similar to that typically found in face-to-face groups. However, some issues remain, particularly in relation to limited access to internet and electronic devices, digital illiteracy and difficulty in navigating GCM software. Personal and persistent engagement of county coordinators was critical for recruitment and retention of the participants. Conclusion: Our experience with using virtual GCM suggests that it has the potential to offer a realistic, low cost and comparable alternative to face-to-face focus groups. However, researchers must factor in digital inequalities that essentially reflect social inequalities such as lack of economic resources, digital illiteracy and geographic isolation; and delineate resources to address them.

Cancer mortality among Asian American ethnicities, by nativity and etiology of cancer (2008-2017)

Tripathi O, He Y, Han B, Paragas DG, Sharp NS, Offor P, Palaniappan L, Srinivasan M, Thompson CA

Purpose: Prior studies show foreign born having lower mortality rates than US-born, without disaggregation by ethnicity. Asian Americans (AA) are the fastest growing ethnic group in the US with a large proportion being foreign-born. But recency of immigration vary by AA ethnicity. We sought to better understand the role of nativity in cancer mortality burden by specific AA ethnicity. Methods: The study included 98,826 decedents (2008-2017) identified as Asian Indian, Chinese, Filipino, Japanese, Korean or Vietnamese on death certificate data from the National Center for Health Statistic (NCHS). Year of death, age, sex (male/female), ethnicity, underlying cause of death (ICD-10), nativity (foreign born/ US born) were extracted. We chose and categorized cancer sites that contribute significantly to AA cancer mortality by suspected etiology: Tobacco-related (colon/rectum, oral cavity/pharynx, leukemia, lung/bronchus, kidney/ renal, pancreas), Screen-detected (colon/rectum, female breast, prostate), Infection related (oral cavity/pharynx, liver, non-Hodgkin lymphoma, stomach), and obesity/diet related (colon/rectum, female breast, ovary, uterine corpus). Population counts were obtained from U.S. Census (IPUMS). We calculated 10-year age-adjusted mortality rates (AAMR; per 100,000) and indirectly standardized mortality ratios (SMR) to compare observed U.S born deaths to expected deaths if they experienced same rates as foreign born. Results: The proportion of foreign-born ranged from 75% in Korean to 44% in Japanese. Overall cancer mortality rates were similar by nativity. By etiology, tobacco related cancers had the highest mortality rates with the highest in Filipino males (foreign-born AAMR: 57.3 (55.7-58.9), USborn AAMR: 55.4 (50.0-60.8). U.S-born had lower mortality compared to foreign-born, except for Japanese males where US-born had higher mortality than expected [tobacco related SMR 1.3 (1.2-1.4), screen- detected SMR 1.3 (1.2-1.3)]. Conclusions: Our results show higher mortality rates in foreign-born compared to US-born; especially in infection and tobacco related cancers. This is unexpected assuming the healthy immigrant effect. Cancer prevention programs targeting AA may consider increased screening for infectious etiologies, particularly among foreign-born
The HIAYA CHAT Project: Qualitative Feedback on a Health Insurance Education Program for Adolescent and Young Adult Cancer Patients

Vaca Lopez PL, Warner EL, Waters AR, Mann K, Anderson J, Ray N, Tsukamoto T, Kaddas HK, Fair D, Lewis M, Perez GK, Park ER, Kirchhoff AC

Purpose: To integrate qualitative feedback in the adaptation of a health insurance education program (HIEP) for adolescents and young adults (AYAs) with cancer. Method: From October 2019-March 2020 we interviewed N=24 AYA patients and survivors ages 18-39 who were currently insured. Participants were interviewed over the phone to provide feedback on the HIEP's four sessions: 1) Insurance terms/ definitions; 2) Insurance coverage components; 3) Insurance legislation; and 4) Cost management, and the suitability of the intervention delivery. Interviews were audio recorded, transcribed, and deductively analyzed using NVivo 12. We classified feedback into two sub-categories: 1) Endorsements, which included anything participants agreed with or found helpful and 2) Recommendations, which included content participants felt should be added to or re-ordered in the sessions. Results: AYA participants were primarily female (58%), non-Hispanic White (79%), on treatment (79%), and mostly had employer-sponsored insurance (75%). Most endorsed the need for AYA cancer patients to learn about health insurance. Survivors in particular reflected back on their treatment experience where having more knowledge of insurance (e.g. appeals process) would have been useful. AYAs endorsed session content about insurance policies, legal protections, and how legislation impacts health care costs. AYAs recommended evaluating patients' health insurance literacy before starting the HIEP because some participants already understand some insurance components. AYAs recommended providing examples of a medical bill, explanation of insurance benefits and budgeting tools to help manage cancer care cost and personal expenses. AYAs expressed that 3 to 4 sessions seemed feasible, but that sessions should be no more than 30 minutes each and delivered through an online platform. Most recommendations were incorporated in the final HIEP. Conclusion: AYA cancer patients report low insurance and health care cost literacy. AYA endorsed learning about insurance policies and protections, recommended tangible examples and brief sessions. Describing AYA cancer patients' preferences for a HIEP may improve relevance and efficacy of the intervention, and ultimately enhance health insurance and cost literacy.

A pilot randomized controlled trial of a digital health intervention to increase physical activity during chemotherapy for colorectal cancer: feasibility and acceptability

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Purpose: We conducted a pilot randomized controlled trial of a digital health intervention to increase moderate to vigorous physical activity (MVPA) among CRC patients during chemotherapy. Methods: Eligible patients were expected to receive ≥ 12 wks of chemotherapy; had provider approval of unsupervised MVPA; English proficient; able to receive email/text messages; and self-reported of <150 min/wk MVPA. Patients were randomized 1:1 to a 12-wk intervention (Fitbit Flex, text messages) vs. usual care. At 0- and 12wks, patients wore an Actigraph GT3X+ accelerometer for 7 days and completed surveys, body size measurements, and an optional 6-min walk test. Here we report the primary outcomes: adherence (e.g., Fitbit wear, text response rate) and acceptability of the intervention. A priori, the intervention would be considered feasible if we observed ≥80% complete follow-up and \geq 70% adherence and satisfaction. Results: In 2018 to 2020, we screened 240 patients; 55% were ineligible and 27% declined. Forty-four patients were randomized to intervention (n=22) or control (n=22). These patients were 57% female; 71% non-Hispanic white; 26% Asian American/ Pacific Islander; 64% had colon cancer; 36% had rectal cancer; 50% had stage III and 39% had stage IV. Mean age and BMI were 54±13 y and 26.2±6.9 kg/m^2. Forty patients completed ≥ 1 study task at 12 wks (91% follow-up). In the intervention arm, patients wore Fitbits a median of 67 of 84 study days (80%) and responded to a median 13 out of 27 questions sent via text message (48%). Among the 19 of 22 intervention patients who completed the feedback survey, 89% were satisfied with the Fitbit and 63% were satisfied with the text messages; 68% said the text messages motivated them to exercise; 74% said the frequency of text messages (1-3 days) was ideal; 79% said receiving text messages in the morning and evening was ideal. Conclusion: We achieved our a priori goals for retention and Fitbit adherence, but satisfaction and response rates with the text messages was lower than 70%. Participant feedback indicated a desire for more tailored text message content. Studies with more racially/ ethnically and socioeconomically diverse CRC patients are also needed. ClinicalTrials.gov Identifier: NCT03524716

Trends in heart disease mortality among US breast cancer survivors, from 1975-2017

Vo JB; Ramin C; Barac A; Berrington de Gonzalez A; Veiga L

Purpose of the study: Heart disease is a significant concern among breast cancer survivors, in part due to cardiotoxic treatments including chemotherapy and radiotherapy. Methods: We examined trends in heart disease mortality among first primary invasive breast cancer survivors diagnosed between 1975-2016 (aged 18-84; survived 12+ months; received initial chemotherapy, radiotherapy, or surgery) in the US Surveillance, Epidemiology, and End Results database. Standardized mortality ratios (SMRs) comparing heart disease mortality among breast cancer survivors to the US general population and 10-year cumulative heart disease mortality estimates accounting for competing events were calculated by calendar year of diagnosis, treatment type, and stage. Results: Of 516,916 breast cancer survivors, 40,812 died of heart disease through 2017 (median follow-up time=11.3y). Overall, SMRs of heart disease declined by calendar year of diagnosis from 1975-2016 (SMR 1.01[95%CI 0.98,1.03] to 0.74[0.69,0.79], ptrend<.001). A similar declining trend was observed for radiotherapy (ptrend<.001), chemotherapy with radiotherapy (ptrend<.001), and nonsignificant decline for surgery alone (ptrend=.18). A sharper decline was observed from 1975-1989 for left-sided radiotherapy, compared to right-sided, and similar declines from 1990-2016. Declining trends were evident among all stages for radiotherapy, localized and regional cancers for chemotherapy with radiotherapy, and localized cancers for surgery alone. In contrast, there was an increasing trend in SMRs for chemotherapy (SMR 0.88[95%CI 0.77,0.99] to 1.01[0.81,1.25], ptrend=.008), especially for regional stage. The 10-year cumulative mortality estimates were 7.12%[95%CI 7.00,7.24] for surgery alone, 1.90%[1.76,1.98] for chemotherapy, 1.37%[1.29,1.46] for chemotherapy with radiotherapy, and 4.56%[4.44,4.69] for radiotherapy. Conclusions: We observed declining trends in heart disease mortality overall and by most treatment types, yet increasing for chemotherapy users, highlighting a need for additional studies with detailed treatment data. Improved cardioprotection strategies in modern radiotherapy may have contributed to declines in heart disease mortality. Understanding the impact of treatment on heart disease mortality is crucial.

Early life exposure to tobacco smoke and ovarian cancer risk in adulthood

Wang T, Townsend MK, Vinci C, Jake-Schoffman DE, Tworoger SS

Background: Ovarian cancer risk in adulthood may be affected by early life exposure to tobacco smoke. We investigated this relationship in two large prospective cohorts, the Nurses' Health Study (NHS) and NHSII. Methods: In total, analyses included 110,305 NHS participants (1976-2016) and 112,859 NHSII participants (1989-2017). Self-reported early life smoking exposures were queried at baseline or follow-up questionnaires. Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for risk of ovarian cancer overall and by tumor histotype. Results: Compared with women who never smoked, ovarian cancer risk was similar for women who started to smoke at age <18 (HR=0.98, 95%CI: 0.86-1.11) or ≥18 (HR=1.02, 95%CI: 0.93-1.12). Overall, ovarian cancer risk was not different among participants whose mother did versus did not smoke during pregnancy (HR=1.05, 95%CI: 0.87-1.27); however, an increased risk was observed among women who themselves were never smokers (HR=1.38, 95%CI: 1.05-1.81) but not ever smokers (HR=0.86, 95%CI: 0.66-1.14; Pheterogeneity=0.02). These associations did not differ by histotype (Pheterogeneity≥0.35). Parental smoking in the home during childhood/adolescence was related to a 15% increased risk of ovarian cancer in adulthood (HR=1.15, 95%CI: 1.04-1.27) and this association was notably stronger among women with non-serous/ low- grade serous tumors (HR=1.28, 95%CI: 1.02-1.61) versus high-grade serous/ poorly differentiated tumors (HR=1.09, 95%CI: 0.93-1.28, Pheterogeneity=0.25). Conclusions: Exposure to parental tobacco smoke, but not early initiation of smoking, was associated with a modest elevated risk of ovarian cancer. Further investigations are required to confirm these findings and elucidate underlying mechanisms.

The HIAYA CHAT project: Utilizing an intervention adaptation framework to inform a health insurance education program for adolescent and young adult cancer patients

Warner EL, Waters AR, Mann K, Vaca Lopez P, Anderson J, Tsukamoto T, Ray N, Kaddas H, Park ER, Perez GK, Fair D, Lewis M, Yancey J, Kirchhoff AC

Purpose: Adapting interventions to new contexts requires consideration of the needs, norms, and delivery structures of the new setting. We report on the process of intervention adaptation to design a health insurance education program (HIEP) for adolescent and young adult (AYA) cancer patients. Methods: Following Movsisyan's four phase evidence-informed population heath intervention guide (Exploration, Preparation, Implementation, Sustainability), we adapted the HIEP, originally designed for pediatric cancer survivors, to newly diagnosed AYAs. We describe the role of stakeholders (researchers, clinicians, patient navigators, advisory board). Data collection included interviews, surveys, and pilot testing. Results: In 2016, during the Exploration phase, we interviewed and surveyed AYAs and identified insurance knowledge gaps, lack of familiarity with insurance legislation, and confusion about resources for insurance and cost concerns. In 2020, during the Preparation phase, we identified mismatches between the original pediatric and survivorship-focused content and the insurance needs of AYAs (health literacy, out-of-pocket costs). We partnered with two AYA patient navigators to ensure the intervention content was suitable from their perspective. Patient interviews were performed to adapt the original pediatric content to the AYA HIEP. A health educator stakeholder assisted in matching intervention content to AYAs literacy level. Through this step, we evaluated the capacity of the research team, navigators, and clinical collaborators to ensure our ability to implement the intervention. In the Implementation phase, we trained the patient navigators to pilot the intervention materials with N=2 patients and N=4 staff. In the Sustainability phase, we will evaluate the feasibility and preliminary efficacy of the adapted HIEP in a randomized controlled trial. Conclusions: By engaging patients, stakeholders, and leveraging institutional resources, we identified and preemptively addressed real-world barriers, which may improve the feasibility and efficacy of the intervention for AYAs. Using evidence-based models to adapt and refine interventions enhances rigor and reproducibility, implements checks and balances, and surmounts challenges of intervention rollout.

Longitudinal Analysis of the Indirect Burden of Prostate Cancer Management on Paid and Unpaid Work: Data from Capsure

Washington SL 3rd, Lonergan PE, Cowan JE, Zhao S, Greenberg S, Broering JM, Palmer NR, Cooperberg MR, Carroll PR

Purpose: Little is known about the impact of prostate cancer (PCa) management on paid work and unpaid responsibilities such as days of work limited, missed, or spent in bed and general health (GH) up to 10 years after treatment. Methods: We identified men diagnosed with PCa managed with radical prostatectomy (RP), external beam radiation therapy (EBRT), brachytherapy (BT, with or without EBRT), or active surveillance/watchful waiting (AS/WW) in a longitudinal study of 43 primarily community-based US urology practices with data on work type [full-time, part-time, or unpaid (retired, on leave/unemployed, disabled, unspecified)]. Weeks of work missed, SF-36 General Health scores, and number of clinic visits annually were collected via surveys administered prior to treatment and at 1,3,5 and 10 years after treatment. Using multivariate repeated measures modeling we examined the association between management, work type (paid vs unpaid), race, income, and time since treatment with work weeks missed over time and GH after adjustments for clinicodemographics. Results: 6,673 men were identified. Mean age of 64.4 years (SD 8.3). Most were insured (54% private, 43% Medicare, 3% Veteran's), white (90%, 7% Black, 1% Latino) with low- (60%) or intermediate-risk (32%) disease. Most had paid work (44%) or were retired (45%) and underwent RP (62%, 14% BT, 14% EBRT, 10% AS/WW). Median 5.3 weeks missed in first year (IQR 1.6-12.2) with up to 2.1 weeks missed at all other times. AS/ WW (RR 0.62, 95% CI 0.51-0.74) conferred lowest risk of missed weeks [BT (RR 0.70, 95% CI 0.61-0.80), EBRT (RR 0.72, 95% CI 0.62-0.83)] compared to RP. Black patients had lower risk of reporting missed weeks (vs white, RR 0.68, 95% CI 0.55-0.83); work type was not. SF-36 General Health declined across 10 years after treatment after adjustments, with RP and BT having better scores than AS/WW and EBRT. Conclusions: Nearly one-quarter of men reported missed work weeks due to PCa management, irrespective of work type, up to 10 years after treatment. AS/WW and Black race had the lowest risk although long-term GH declined more than with RP or BT. In carefully selected men with PCa, the long-term impact of management on GH and work should be considered when counseling about treatment.

A Qualitative Inquiry of Cancer Caregiving during Young Adulthood: Challenges, Responsibilities, Social Support, and Teamwork

Waters AR; Gren LH; Rogers CR; Kirchhoff AC; Warner EL

Purpose: Young adult cancer caregivers (YACC) may experience heightened caregiver burden because they take on caregiving during a challenging time of life, thus, the purpose of this qualitative study was to describe YACC experiences, burden, and social support in developmental context. Methods: Grounded by the Cancer Family Caregiving Experience Model and the Stress and Coping Social Support Theory, semi-structured interviews were conducted with English speaking cancer caregivers (ages 18-39). Participants were recruited in-person and via social media. Interviews were recorded, transcribed, and quality checked. Inductive analysis was applied to describe YACC perceptions of caregiving, while YACC social networks and social support were deductively coded by Stress and Coping Social Support Theory tenants. Results: YACC (N=34) were primarily in the age range of 15-29 years (38.2%), female (70.6%), non-Hispanic white (91.2%), and heterosexual (97.1%). Most YACC were college graduates (53.0%), spouses/partners (53.0%), and caring for someone other than the patient (67.6%). YACC often did not view themselves as cancer caregivers; instead, they viewed the caregiving activities they performed as an extension of their existing relationship with the patient. YACC developmental-specific responsibilities (e.g., education, establishing a career, having children) often conflicted with their caregiving responsibilities and contributed to emotional burden. In response, YACC often formed caregiver teams-consisting of family, friends, and community members-to assist the YACC and patient with various needs. Of the five social support types, YACC most often reported receiving emotional (e.g., talking through frustrations) and instrumental (e.g., financial aid) support from their social network. Conclusions: Expanding theory to encapsulate developmental context of young adulthood may be bring attention to the conflict between caregiving and young adult development that YACC often experience. YACC may benefit from targeted supportive services tailored to their developmental age and unique needs.

AYA Cancer Patients' and Survivors' Employment Changes during the COVID-19 Pandemic are Associated with High Financial Toxicity

Waters AR, Kaddas H, Mann K, Vaca Lopez PL, Warner EL, Ramsay J, Ou J, Ray N, Tsukamoto T, Fair DB, Letourneau JM, Lewis MA, Gill DM, Linder L, Kirchhoff AC

Purpose: Describe associations between adolescent and young adult (AYA) cancer patients' and survivors changes in employment during the COVID-19 pandemic and financial toxicity. Methods: Eligible individuals were diagnosed between 15-39 years of age, currently age ≥ 18 , and recruited through the Huntsman-Intermountain Adolescent and Young Adult Cancer Care Program (N=709). Survey questions included demographics, employment, and the 11-item Comprehensive Score for financial Toxicity (COST) which captures financial toxicity in the last four weeks. COST is scored from 0 to 44 with lower scores indicating greater financial toxicity. Scores were dichotomized as high (0-21) or low (22-44). Changes in employment since March 2020 were categorized as no change, increase in hours, and decrease in hours/lost job. We calculated descriptive statistics and fit a multivariable logistic regression to test the association between employment change and financial toxicity controlling for current age, gender, and treatment status. Results: Of 280 respondents (39.5% participation); 198 (70.7%) were employed prior to the pandemic thus included in analyses. Employed individuals were a mean of 29.4 years (range 18-58), 64.3% were female, and 50.5% had received cancer treatment since March 2020. Nearly a third (31.3%) had lost their job or reported reduced hours; 50.3% reported high financial toxicity. Among the previously employed, those who lost their job or had their hours reduced have nearly six times the odds of high financial toxicity than those who reported no change in hours (Odds Ratio [OR]=5.8, 95% Confidence Interval [CI]: 2.6-12.9). In the same model, the odds of reporting high financial toxicity was over twice as high among females than males (OR=2.3, 95% CI: 1.2-4.5). Treatment status and age were not significant. Conclusions: Employment changes during the COVID-19 pandemic resulted in increased financial toxicity among a population already susceptible to high financial hardship. Societal gender inequity appears to be mirrored in participants' financial toxicity during the pandemic. Employment interventions for patients and survivors of AYA cancers who have experienced job loss or reduction in work hours during the pandemic are needed and may particularly benefit females.

Coaching Fidelity in a Lifestyle Intervention for Ovarian Cancer Survivors

Werts SJ, Skiba MB, Wright SJ, Crane TE, Thomson CA

Purpose of the Study: Telehealth coaching is a cost-effective approach to reach diverse populations and deliver lifestyle interventions. Treatment fidelity of the delivery of a telehealth coaching intervention in the Lifestyle Intervention for oVarian cancer enhanced survival (LIVES) study is evaluated here to establish the level of fidelity achieved using a student-model of health coaching for cancer survivors. Methods: LIVES (n=1205) is a randomized, controlled trial wherein 601 ovarian cancer survivors were assigned to an intervention emphasizing a high fiber, low fat diet, increased fruit and vegetable intake, and increased physical activity. To promote behavior change, participants engaged in structured telephone coaching calls with trained nutrition science students over a 24-month period. Coaching fidelity was evaluated using a checklist developed a- priori for LIVES. A total of 259 randomly selected calls were evaluated by two independent reviewers using the established checklist and a score of ≥ 11 out of 14 points was considered fidelity adherent. Results: Scored calls represented 173 individual participants and 87% of calls were considered fidelity adherent. The average fidelity score was 12.1 ± 1.4 . Of calls scored, intervention specific goal setting was documented in 88%, self-efficacy in 46%, and assessment of barriers and facilitators to change in 97%. In relation to behavior change, 79% of participants were meeting \geq 3 of 5 study goals by the 6-month follow-up. Conclusions: In the LIVES trial, high fidelity is demonstrated in the delivery of an intervention utilizing a student-model for telehealth coaching. This model is a valid approach to remotely deliver lifestyle interventions for ovarian cancer survivors and could be considered for future telehealth interventions.

A prospective analysis of sedentary behavior and risk of multiple myeloma in three large cohorts

Yue Y; Lee DH; Wang M; Marinac CR; Teras LR; Giovannucci EL; Smith-Warner SA; Birmann BM

Purpose of the study: The proposed biological mechanisms between sedentary behavior and cancer are mediated by adiposity, sex hormones, inflammation, and vitamin D. These four factors have also been shown to affect immune function and oncogenesis of blood cells, resulting in high multiple myeloma (MM) risk. Therefore, we undertook the present study to examine the association of sedentary behavior assessed as time sitting while watching television (TV), with the risk of MM. Methods: We prospectively followed 104,675 women in the Nurses' Health Study (NHS) (1992-2014), 115,344 women in the NHS II (1991-2014), and 48,257 men in the Health Professional Follow-up Study (HPFS) (1988-2014). Time spent sitting watching TV was assessed at baseline and subsequently updated. To better represent long-term behavior and minimize random within-person variation, we calculated cumulative average hours of sitting time per day across each 2-year follow-up interval. Trained personnel blinded to exposure status reviewed medical records to confirm the occurrence and date of MM (ICD-8=203) diagnoses through 2014. Hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated using Cox proportional hazards models in each cohort and then pooled using a fixed-effects model with inverse variance weighting. Cox proportional hazard models were stratified by age and follow-up cycle and adjusted for body mass index and physical activity. Results: We documented 443 cases of MM (217 from NHS, 54 from NHS II, and 172 from HPFS) during follow-up. On average, the time spent sitting watching TV

was 1.8 hours/day in the NHS, 1.3 hours/day in NHSII, and 1.6 hours/day in HPFS. In the pooled analysis, compared to participants with \leq 1 hour/day of sedentary TV screen time, those with >2 hours/day had a multivariable HR of 0.97 (95% CI: 0.72-1.31). Sitting during TV screen time was also not associated with MM risk when modeled as a continuous variable (per 1 hour/day increase, HR= 1.00, 95% CI: 0.94-1.07). This association was similar in both women and men (per 1 hour/day increase, in women HR=1.01, 95% CI: 0.93-1.09; in men HR=0.97, 95% CI: 0.84-1.13). Conclusion: In these cohorts with relatively low levels of time spent sitting watching TV, the findings do not support an association with MM risk.

Mammography adherence in relation to functionrelated indicators in older women

Zhang D, Abraham L, Sprague BL, Onega T, Advani S, Demb J, Miglioretti DL, Henderson LM, Wernli KJ, Walter LC, Kerlikowske K, Schousboe JT, Braithwaite D, Chrischilles E, O'Meara ES

Background: Prior epidemiologic studies of screening mammography patterns by functional status in older women show inconsistent results. Methods: We used Breast Cancer Surveillance Consortium (BCSC)-Medicare linked data (1999-2014) to investigate the association of functional limitation with adherence to screening mammography in 145,478 women aged 66-74 years. Functional limitation was represented by a claims-based function-related indicator (FRI) score which incorporated 16 items reflecting functional status. Baseline adherence was defined as mammography utilization 9-30 months after the last mammogram. Longitudinal adherence was examined among women who were adherent at baseline and defined as time from the index screen to the end of the first 30-month gap in mammography. Multivariable logistic regression and Cox proportional hazards models were used to investigate associations between FRI and baseline and longitudinal adherence, respectively; specifically, non- adherence was treated as the dependent variable in these models. We conducted subgroup analyses to examine if associations differed by age (66-70 vs. 71-74 years). Results: Overall, 69.6% of participants had no substantial functional limitation (FRI score 0), 23.5% had some substantial limitation (FRI score 1), and 6.8% had serious limitations (FRI score≥2). Mean age at baseline was 68.5 years (SD=2.6), 85.3% were white, and 77.1% were adherent to screening guidelines at baseline. Women with a higher burden of functional limitations were more likely to be non-adherent at baseline (FRI≥2 vs. 0: aOR=1.13, 95% CI=1.06, 1.20, p-trend<0.01). In analysis for longitudinal adherence, the median follow-up was 28.6 months (IQR: 5.7-62.2); similarly, a higher FRI score was associated with longitudinal non-adherence (FRI≥2 vs. 0: aHR=1.16, 95% CI=1.11, 1.22, p- trend<0.01). Point estimates of FRI

effect measures did not differ substantially by age category. Conclusion: Women aged 66-74 years with a higher burden of functional limitations are less likely to be adherent to screening mammography recommendations.

Lower-extremity lymphedema, physical functioning, and activities of daily living in the WHI LILAC survivorship cohort

Zhang X, McLaughlin E, Krok-Schoen JL, Naughton M, Bernardo BM, Cheville A, Allison M, Stefanick M, Bea JW, Paskett ED

Purpose of the study: To examine lower-extremity lymphedema (LEL) among older female cancer survivors with colorectal, endometrial, or ovarian cancer, and to determine the association of LEL with physical functioning, and activities of daily living (ADLs). Methods: Data from the Women's Health Initiative (WHI) Life and Longevity after Cancer (LILAC) Study were used. Validated surveys assessed LEL, physical functioning, and ADLs. Linear regression and logistic regression were used to examine the association of LEL, physical functioning scores (PFS), and whether needing help with ADLs. We also examined whether cancer type and age groups (65-79 years vs. ≥80 years) could modify these associations. Results: Female colorectal, endometrial, and ovarian cancer survivors from the LILAC study were included in the analysis (n=900). Among these women, 292 (32.4%) reported LEL, with the highest prevalence of LEL in ovarian cancer survivors (36.5%), followed by endometrial (32.5%) and colorectal cancer survivors (31.4%). Compared to women without LEL, women with LEL had 16.8±1.7 lower PFS (P<0.0001). Similarly, women with LEL had a higher odds of needing help with ADLs (OR=2.45, 95% CI: 1.64-3.67). The association of LEL was higher on physical functioning and ADLs among colorectal cancer survivors, although the interaction between LEL and cancer type was not significant. Overall, the difference in PFS between women with LEL vs. women without LEL was greater among those \geq 80 years vs. those aged 65-79 years. However, among colorectal cancer survivors, the association with PFS was greater among women aged 65-79 years vs. women \geq 80 years (Page*LEL*cancer type=0.03). Conclusions: At least a third of older female colorectal, endometrial, and ovarian cancer survivors experienced LEL. LEL was associated with lower physical functioning and greater odds of needing help with ADLs. Our findings suggest that healthcare providers should regularly assess LEL among cancer survivors and provide effective interventions to reduce LEL symptoms and improve physical functioning for older cancer survivors.

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Karen Basen-Engquist, Ph.D., M.P.H. Professor, Behavioral Science MD Anderson Cancer Center ASPO President



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Paul Cinciripini, Ph.D. Chair, Behavioral Science MD Anderson Cancer Center 2020 Joseph W. Cullen Memorial Award Recipient

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Electra D. Paskett, PhD, Professor and Chair, Division of Cancer Prevention and Control, Department of Internal Medicine, College of Medicine, The Ohio State University (Electra.Paskett@osumc.edu)

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