

ASPO *American Society of
Preventive Oncology*

**TOWARDS ACHIEVING
HEALTH = QUILTY**

46th Annual Meeting

March 13-15, 2022

Tucson, Arizona

Program & Abstracts

**Towards
Achieving
Health
= equity
2022**



TABLE OF CONTENTS

Anti-Bullying & Harassment Policy.....	8
Statement Against Racism	9
Thank You	10
Welcome	11
Hotel Map	12
Information	13
Agenda	14
AD/PL Agenda	19
New Investigators.....	22
Oral Abstracts.....	23
Poster Directory	30
Poster Abstracts	34
Job Listing & Advertisements	74

@ASPrevOnc **#ASPO2022**



We respectfully acknowledge we are on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O’odham and the Yaqui.

ANTI-BULLYING & HARASSMENT POLICY

The American Society of Preventive Oncology (ASPO) encourages open and honest intellectual debate as part of a welcoming and inclusive atmosphere at every conference. To help maintain an open and respectful community of professionals, ASPO does not tolerate inappropriate behavior at our conference, including bullying or harassment of any kind, sexual or otherwise.

ASPO condemns inappropriate or suggestive acts or comments that demean another person by reason of their gender, gender identity or expression, sexual orientation, race, religion, ethnicity, age, disability, or scientific viewpoint; or that are unwelcome or offensive to other attendees.

If you believe you have been subjected to or have otherwise experienced behavior at an ASPO conference that violates our Anti-Bullying and Harassment Policy, please act promptly to report the issue to ASPO's President and Executive Director so that steps may be taken to address the situation immediately.

ASPO reviews allegations of any such behavior on a case-by-case basis, and violations may result in cancellation of a conference registration or the prohibition of future attendance by particular individuals.

ASPO will investigate complaints fairly and discreetly, with an emphasis on conducting a rapid inquiry, the results of which typically will be shared with both the individual reporting the issue and the individual(s) who has been accused of violating the Policy. Reports requesting anonymity will be respected, although ASPO reserves the right to notify appropriate law enforcement should the allegations be serious enough to warrant such notice.

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

The ASPO Executive Committee offers special thanks to Program Co-Chairs, Dr. Scarlett Lin Gomez and Dr. Steve Patierno, for their extraordinary commitment in facilitating the development of the program for this meeting, and to the entire 2022 ASPO Program Committee for sharing their expertise and valuable contributions.

Special Interest Group Leadership

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

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

Lifestyle Behaviors, Energy Balance & Chemoprevention
Chair: Cynthia Thompson
Vice-Chair: Adriana Coletta

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

Cancer Health Disparities
Chair: Theresa Hastert
Vice-Chair: Alicia Best

Early Detection & Risk Prediction of Cancer
Chair: Katharine Rendle

Early Career Development
Chair: Tracy Crane

Global Cancer Research
Chair: Rahma Mkuu

Abstract Reviewers

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

Saber Amin
Karen Basen-Engquist
Moriah Bellissimo
Allison Burton-Chase
Leslie Carnahan
David Cheng
Scarlett Gomez
Sheetal Hardikar
Theresa Hastert
Lauren Houghton
Anita Kinney
Juliet Kroll
Cevadne Lee
Chris Li
Purnima Madhivanan
Sarah Markt
Laurie McLouth
Jitendra Kumar Meena
Justin Moore
Humberto Parada
Steve Patierno
Bo Qin
Kate Rendle
Ramzi Salloum

Carola Sánchez Díaz
Ami Sedani
Julia Stal
Caroline Thompson
Cyndi Thomson
Shelley Tworoger
Carmina Valle
Kate Weaver
Nur Zeinomar

Staff

Nicole Brandt
Executive Director

Stephanie Garwood
Meeting Manager

Kortney Incorvaia
Membership & Communications Manager

Funding

Funding for this conference was made possible (in part) by 1R13CA271709-01 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.

WELCOME

Welcome to our in-person ASPO 2022 meeting!! One year ago, we thought meeting in person would be a no-brainer. However, the pandemic continues to be a challenge for these meetings. Thanks to the availability of vaccinations and safety measures we put into place, meeting in person has become possible once again. I am looking forward to seeing familiar faces and meeting new ones, and I will miss those unable to make it to the meeting.

We have a truly exciting program this year. Drs. Scarlett Gomez and Steven Patierno, along with the program committee, have done an outstanding job putting together an exceptional agenda. I also want to personally thank Dr. Electra Paskett for her continued leadership in organizing the very popular Cancer Control Associate Directors/Program Leaders (AD/PL) Workshop. We are so fortunate to have this offering as part of ASPO.

We have something for everyone, including our community scientists and organizations. As a program committee, we decided to continue our focus on Health Equity. This topic has so many dimensions and challenges, a single conference cannot adequately do it justice. As the first Hispanic President of this amazing organization, it is my sincere wish that health equity continues to be a part of the fabric of ASPO and its future conferences. Our under-served and under-represented communities deserve this level of attention. For every topic and presentation that is given, we must ask ourselves: How will our science help address inequities? I challenge all of us to ask ourselves and each other this question. I especially want the future leaders of ASPO to keep this question in mind as you are building your successful careers, which ASPO is here to support.

As always, we welcome your input and feedback on how we can make future meetings better. The only way we can improve is with your input, active participation, and sustained support. I want to thank all who made this meeting possible, especially the amazing staff from HollandParlette, Nicole Brandt, Stephanie Garwood, and Kortney Incorvaia. Again, welcome, and thank you for attending this year's meeting. Vaxxed, masked, and ready to meet, I will be wearing a big smile under my mask.

Dr. Elena Martinez

ASPO President 2021-2023

EXECUTIVE COMMITTEE

President

Elena Martinez, PhD
UC San Diego Moores Cancer Center

President-Elect

Anita Kinney, PhD, RN, FAAN, FAMR
Rutgers Cancer Institute of New Jersey

Secretary-Treasurer

Allison Burton-Chase, PhD
Albany College of Pharmacy and Health Sciences

Past President

Karen Basen-Engquist, PhD
UT M.D. Anderson Cancer Center

Directors-at-Large

Sandi Pruitt, PhD
UT Southwestern

Li Li, MD, PhD
University of Virginia

Yamilé Molina, PhD, MPH, MS
University of Illinois Chicago

PROGRAM COMMITTEE

Co-Chairs

Scarlett Lin Gomez, PhD, MPH
UCSF

Steven Patierno, PhD
Duke University

Committee

Tracy Battaglia, MD
Boston University

Andrew Chan, MD, MPH
Massachusetts General Hospital

Felina Cordova-Marks, DrPh, MPH
University of Arizona

Melissa Davis, PhD, *Weill Cornell*

Gilbert Gee, PhD, *UCLA*

Erin Kobetz, PhD, MPH
University of Miami

Chris Li, MD, PhD, MPH
Fred Hutch

Elena Martinez, PhD, *UCSD*

Caroline Thompson, PhD, MPH
The University of North Carolina at Chapel Hill

HOTEL MAP

■	PIMA
•	AD/PL Workshop
•	Early Career Sessions
•	Symposiums
•	Lunch Sessions
■	MADERA
•	Community & Science Workshop
•	Paper Sessions
•	Breakfast Session
■	VENTANA
•	Executive Committee Meeting
•	Community & Science Breakfast Session
•	Paper Sessions
■	COPPER
•	New Investigators Workshop



INFORMATION

Registration Hours

Saturday 2:00 pm – 5:00 pm
Sunday 7:30 am – 5:00 pm
Monday 7:30 am – 4:00 pm
Tuesday 7:30 am – 1:00 pm

Internet Access

Wifi is available in the meeting space. Connect to the Marriott Conference network and use password **Marriott2022**.

Masks

Masks are required at all indoor ASPO functions, except when eating or drinking. A limited number of extra masks are available at Registration.

Sunday Evening Reception, sponsored by the University of Arizona

Following Sunday's symposium, you are invited to attend a reception at the University of Arizona Environment and Natural Resources 2 (ENR2) Building, 1064 E Lowell Street. The building is about an eight minute walk from the Marriott, and volunteers will be available to assist with directions. The reception will be held outdoors in the building's courtyard, and light snacks will be served along with beer and wine. Attendees will be able to go to the roof of the building in groups for stargazing with a local astronomy expert.

Exhibitors

Exhibitors can be found in Ventana near the Registration Table

University of Arizona STEP-UP Summer Research Program

Monday Evening Poster Session & Awards

The poster session will take place in the auditorium of the **Arizona History Museum** on **Monday, March 13, 5:30 – 7:30 pm**. When exiting the main doors of the Marriott, the museum is across 2nd Street, to the right (949 E. 2nd St.)

Poster presenters should hang posters between 12:00 pm and 3:00 pm on Monday, March 13. Poster boards will be numbered, and presenters can find their poster number in the poster directory starting on page 28. Pushpins will be provided. Poster judges will evaluate posters of the top ranking submitted abstracts, and first through fourth place poster awards will be announced Tuesday morning prior to Symposium 3. Two trainee poster awards will also be given. Poster presenters should be present at their posters during the session to take questions. Please remove your poster at the conclusion of the session. ASPO is not responsible for posters left on boards.

During the poster session, light hors d'oeuvres will be served, and each attendee will receive two drink tickets. The museum will also be open for exploration. Food and drink are not allowed in the galleries.

Monday Evening Student/Post-Doc Gathering

After the poster session on Monday, join other students and post-docs for an informal gathering at **Gentle Ben's Brewing**. Gentle Ben's is a 2-minute walk from the Marriott, at 865 E. University Blvd. The group will be upstairs, in the second floor outdoor area. Food & drink are on your own.

Meals

Continental Breakfasts and Box Lunches are provided on Monday and Tuesday. If you made a special dietary request that is not accommodated by the food provided, please contact a hotel banquet staff member.

ASPO-NCI Cancer Prevention Training Program Directors/PIs Meeting

This meeting will take place virtually on **Thursday, April 28 at 1:00 pm Eastern**, and the link will be emailed. Please contact Shine Chang with questions: shinechang@mdanderson.org.

Save the Date for 2023!

Next year's meeting will be held **March 12-14** at the **Hilton San Diego Bayfront**. Abstract submission opens in October. If you are interested in serving on the Program Committee, please email us at info@aspo.org.

9:00 AM - 12:00 PM	New Investigators Workshop Invitation only	COPPER
12:30 PM - 2:30 PM	Executive Committee Meeting Invitation only	VENTANA
1:00 PM - 3:00 PM	Community and Science Workshop Ysabel Duron, The Latino Cancer Institute, followed by presentations of COE programs	MADERA
EARLY CAREER SESSIONS		
1:00 PM - 2:30 PM	When Resiliency Isn't Enough: Navigating Early Career Burnout in Academia <i>Co-Chairs:</i> Angela Mazul, PhD, Washington University; Lynn Chollet Hinton, PhD, University of Kansas Medical Center <i>Speakers:</i> Allison M. Burton-Chase, PhD, Albany College of Pharmacy and Health Sciences; Humberto Parada, Jr., PhD, San Diego State University; Scarlett Lin Gomez, PhD, UCSF	PIMA
2:30 PM - 3:45 PM	Establishing a Dynamic Mentorship Team to Maximize Your Career Trajectory and Professional Development <i>Co-Chairs:</i> Marvin Langston, PhD, MPH, Kaiser Permanente Northern California; Justin Moore, PhD, MPH, Medical College of Georgia <i>Speakers:</i> Prajakta Adsul, MBBS, MPH, PhD, University of New Mexico Comprehensive Cancer Center; Charles R Rogers, PhD, MPH, MS, MCHES, Huntsman Cancer Institute, University of Utah; Wendy Demark-Wahnefried, PhD, RD, University of Alabama at Birmingham	PIMA
4:30 PM - 4:45 PM	Presidential Welcome Elena Martinez, PhD, University of California San Diego	PIMA
4:45 PM - 4:50 PM	2022 Cullen Award Presentation <i>Recipient:</i> Thomas Eissenberg, PhD, Virginia Commonwealth University <i>Nominated by:</i> Bernard Fuemmeier, Alison Breland, Andrew Barnes, Caroline Oates Cobb, and Eric Soule, Virginia Commonwealth University	
4:50 PM - 5:30 PM	2022 Fraumeni Award Presentation & Address <i>Recipient:</i> Scarlett Lin Gomez, PhD, MPH, UCSF <i>Nominated by:</i> Elena Martinez, UCSD	PIMA
5:30 PM - 7:00 PM	SYMPOSIUM 1 Cancer Interception: From Concept to Clinic <i>Co-Chairs:</i> Andrew Chan, MD, MPH, Massachusetts General Hospital; Caroline Thompson, PhD, MPH, The University of North Carolina at Chapel Hill <i>Speakers:</i> Eduardo Vilar Sanchez, MD, MPH, MD Anderson Cancer Center; Ruth Etzioni, PhD, Fred Hutchinson Cancer Center; Erica Warner, ScD, MPH, Harvard Medical School; Olivera Finn, PhD, University of Pittsburgh	PIMA
7:00 PM - 9:00 PM	Networking Mixer & Stargazing, Sponsored by the University of Arizona UNIVERSITY OF ARIZONA ENVIRONMENT AND NATURAL RESOURCES 2 (ENR2) BUILDING, 1064 EAST LOWELL STREET	

8:00 AM - 9:30 AM	BREAKFAST SESSIONS Equity in Precision Cancer Prevention: From Bench to Bedside PIMA <i>Presented by</i> Early Detection & Molecular Epidemiology and Environment SIGs <i>Co Chairs:</i> Sheetal Hardikar, MBBS, PhD, MPH, University of Utah; Katharine Rendle, PhD, MPH, University of Pennsylvania; Andrea Burnett-Hartman, PhD, MPH, Kaiser Permanente <i>Speakers:</i> Meira Epplein, PhD, Duke Cancer Institute; Timothy Rebbeck, PhD, Harvard University; Katrina Goddard, PhD, NCI
	Community & Science Networking Round-tables (open to all attendees) VENTANA
9:30 AM - 9:45 AM	BREAK
9:45 AM - 11:15 AM	SYMPOSIUM 2 PIMA Innovations in Patient Navigation: What's it going to take to achieve cancer equity? <i>Co-Chairs:</i> Tracy Battaglia, MD, MPH, Boston University; Felina Cordova-Marks, DrPH, MPH, University of Arizona <i>Speakers:</i> Andrea Dwyer, BS, University of Colorado Cancer Center; Tracy Battaglia, MD, MPH, Boston University; Angelo Moore, PhD, MSN, RN, Duke Cancer Institute; Kellen Polingyumptewa, Hopi Health Cancer Center Support Services
11:15 AM - 11:30 AM	BREAK
11:30 AM - 12:30 PM	CONCURRENT WORKSHOPS Cancer Consortia: Exemplars, Challenges & Solutions MADERA <i>Co-Chairs:</i> Felina Cordova-Marks, DrPH, MPH, University of Arizona; Chris Li, MD, PhD, MPH, University of Washington <i>Speakers:</i> Denise Dillard, PhD, Southcentral Foundation; James Cerhan, MD, PhD, Mayo Clinic; Sheetal Hardikar, PhD, MBBS, University of Utah Research Using EHR Data Across the Cancer Continuum: Bias, Governance, Linkages PIMA <i>Co-Chairs:</i> Caroline Thompson, PhD, MPH, The University of North Carolina at Chapel Hill; Scarlett Gomez, PhD, MPH, University of California San Francisco <i>Speakers:</i> Caroline Thompson, PhD, MPH, The University of North Carolina at Chapel Hill; Jessica Chubak, PhD, Kaiser Permanente; Rebecca Hubbard, PhD, University of Pennsylvania

1:30 PM - 2:45 PM

CONCURRENT PAPER SESSIONS

Cancer Health Disparities

PIMA

Moderator: Theresa Hastert, PhD, Karmanos Cancer Institute

"Should I Give it to My Kids?": Factors that Influence HPV Vaccine Hesitancy Among African American Parents

Ariel Washington, PhD, MSSW, University of Michigan

Multi-Level Factors Are Associated with Uptake of Cervical Cancer Screening in Sexual and Gender Diverse Adults Residing in Arizona

Uma Nair, PhD, University of South Florida

Racial Disparities in Family Variant Testing for Cancer Predisposition Genes

Nawal Kassem, MD, Indiana University School of Medicine

Sociodemographic Characteristics Associated with COVID-19 Related Delays in Cancer Screenings and Decreased Trust in the Healthcare System among an Urban Cancer Center's Catchment Area Population

Leslie Carnahan, PhD, MPH, University of Illinois at Chicago

1:30 PM - 2:45 PM

Survivorship & Health Outcomes

MADERA

Moderator: Kate Weaver, PhD, Wake Forest School of Medicine

Improved Sleep Quality Is Associated with Reduced Insulin Resistance in Cancer Survivors Undertaking Circuit, Interval-Based Exercise

Amber Normann, MS, Boston University; DFCI

An Analysis of Factors Related to Care Engagement along the Cancer Survivorship Care Continuum for Cancer Survivors in Florida

Erin Mobley, PhD, MPH, University of Florida

Health-Related Quality of Life in Adolescents and Young Adults With and Without Cancer, Using Propensity Score Matching

Eunju Choi, PhD, University of Texas MD Anderson

Risk of Fetal Death in a Population-Based Sample of 65,000 Adolescent and Young Adult Women with a History of Cancer

Caitlin Murphy, PhD, MPH, UTHealth School of Public Health

2:45 PM - 3:00 PM

BREAK

3:00 PM - 4:30 PM

SYMPOSIUM 3

PIMA

Convergence Epidemiology: Bridging Omics with Social Determinants and Structural Factors

Co-Chairs: Melissa Davis, PhD, Weill Cornell;
Steven Patierno, PhD, Duke University

Speakers: Rulla Tamimi, ScD, MS, Weill Cornell Medical College; Eimear Kenny, PhD, Ichan School of Medicine; Alpa Patel, PhD, American Cancer Society

4:30 PM - 5:30 PM

Business Meeting

PIMA

5:30 PM - 7:30 PM

Poster Session and Reception

ARIZONA HISTORY MUSEUM, 949 E 2ND STREET

8:00 PM

Grad Student / Postdoc Mixer

GENTLE BEN'S BREWING, 865 E UNIVERSITY BLVD

8:00 AM - 9:30 AM	<p>BREAKFAST SESSIONS</p> <p>Climate Change and Cancer: Challenges and Opportunities for Cancer Prevention and Control MADERA</p> <p><i>Presented by:</i> Molecular Epidemiology and the Environment Special Interest Group Structural Racism and Cancer Inequity Cancer Health Disparities Special Interest Group</p> <p><i>Moderators:</i> Heather D'Angelo, MHS, PhD & Gila Neta, PhD, MPP, National Cancer Institute</p> <p><i>Speakers:</i> Leticia Nogueira, PhD, MPH, American Cancer Society; Ana Patricia Ortiz, Ph.D., MPH, University of Puerto Rico Comprehensive Cancer Center; Tracy Crane, Ph.D., University of Miami Sylvester Comprehensive Cancer Center; Mónica Ramírez-Andreotta, MPA, PhD, University of Arizona Mel and Enid Zuckerman College of Public Health</p> <p>Structural Racism and Cancer Inequity</p> <p><i>Presented by:</i> Cancer Health Disparities Special Interest Group</p> <p><i>Panelists:</i> Shobha Srinivasan, PhD, National Cancer Institute; Kathy Tossas-Milligan, PhD, MS Virginia Commonwealth University School of Medicine; Derek M. Griffith, PhD, Lombardi Comprehensive Cancer Center & Georgetown Racial Justice Institute</p>
9:30 AM - 9:45 AM	BREAK
9:45 AM - 11:15 AM	<p>SYMPOSIUM 4 PIMA</p> <p>Re-situating Cancer Control within Public Health and Communities</p> <p><i>Co-Chairs:</i> Tracy Crane, PhD, University of Miami; Elena Martinez, PhD, University of California San Diego</p> <p><i>Speakers:</i> Cheryl Anderson, PhD, MPH, MS, UCSD; Luis Carvajal-Carmona, PhD, UC Davis; Tracy Crane, PhD, University of Miami</p>
11:30 AM - 12:45 PM	<p>LUNCH PANEL DISCUSSION PIMA</p> <p>Structural/Institutional Interventions Addressing Structural Inequities, Including Novel Interventions</p> <p><i>Co-Chairs:</i> Chris Li, MD, PhD, MPH, University of Washington; Gilbert Gee, PhD, University of California Los Angeles</p> <p><i>Speakers:</i> Paul Buckley, PhD, Fred Hutchinson Cancer Center; Angela Talton, MBA, City of Hope National Medical Center; Kelvin Womack, St. Jude Children's Research Hospital</p>
12:45 PM - 1:00 PM	BREAK

1:00 PM - 2:15 PM

CONCURRENT PAPER SESSIONS

Paper Session: Lifestyles Behavior, Energy Balance & Chemoprevention

PIMA

Moderator: Cynthia Thomson, PhD, RDN

Changes in Physical Activity, Functional Capacity, and Cardiac Function during Breast Cancer Therapy

Moriah Bellissimo, PhD, RD, Virginia Commonwealth University

Type-2 Diabetes Mellitus and Risk of Colorectal Polyps: A Colonoscopy-Based Study Using Natural Language Processing

Sheetal Hardikar, MBBS, PhD, MPH, University of Utah

Socioeconomic and Geographic Predictors of Poor Diet Quality in a Large U.S. Cohort of Adult Men and Women

Marjorie McCullough, ScD, RD, American Cancer Society

Sedentary Time and Breast Cancer Risk in the Sister Study Cohort

Sidney Donzella, MPH, University of Washington

Paper Session: Behavioral Science & Health Communication

MADERA

Moderator: Scarlett Lin Gomez, PhD, MPH

IMPACT: A Randomized Controlled Trial of an mHealth Physical Activity Intervention for Young Adult Cancer Survivors

Carmina Valle, PhD, MPH, University of North Carolina at Chapel Hill

Understanding Cancer Genetic Risk Assessment Intentions in a Tailored Risk Communication Intervention Randomized Controlled Trial

Circe LeCompte, MS, ScD, Rutgers Cancer Institute of New Jersey

Does Neighborhood Social Cohesion Influence Participation in Routine Cancer Screening? Findings from a Representative Sample of Adults in South Florida

Jordan Baeker Bispo, PhD, University of Miami

Acceptability of Mailed HPV Self-Testing Kits among Patients of a Large Urban Safety- Net Healthcare System

Susan Parker, MPH, Baylor College of Medicine

2:15 PM

Meeting Concludes

Saturday, March 12 **PIMA**

3:00 PM

Welcome

Electra Paskett, PhD, The Ohio State University

3:05 PM - 5:00 PM

NCI Speaks

Moderator: Philip Castle, PhD, MPH

Panelists: Katrina Goddard, PhD; Emily Tonorezos, MD, MPH;
Patti Gravitt, PhD, MS

5:00 PM - 6:15 PM

DEI: New Kid on the Block

Moderator: Electra Paskett, PhD, Ohio State University

Panelists: Henry Ciolino, PhD, NCI;
Carmen Guerra, MD, MSCE, FACP, University of Pennsylvania

6:15 PM - 7:30 PM

Population Science Shared Resources

Moderator: Jamie Studts, PhD, University of Colorado

Panelists: Erin Kobetz, PhD, MPH, University of Miami;
Martha Shrubsole, PhD, Vanderbilt University

7:30 PM

Wrap Up & Adjourn

Electra Paskett, PhD, The Ohio State University

7:30 PM - 8:00 PM

Reception

TERRACE

Sunday, March 13

8:00 AM - 8:05 AM

Welcome

Electra Paskett, PhD, The Ohio State University

8:05 AM - 9:30 AM

Population Science Programs

Moderator: Joanne Dorgan, PhD, MPH, University of Maryland

Panelists: Elizabeth Brown, PhD, University of Alabama at Birmingham;
Heather Jim, PhD, Moffitt Cancer Center;
Susan Flocke, PhD, Oregon Health & Science University

9:30 AM - 11:00 AM

Community Outreach & Engagement

Moderator: Jasmin Tiro, PhD, University of Texas Southwestern

Panelists: Lourdes Baez Conde, PhD, USC; Ronny Bell, PhD, Wake Forest
University; Moon Chen, PhD, MPH, UC Davis

11:00 AM - 12:00 PM

CCSG Review

Moderator: Anita Kinney, PhD, Rutgers University

Panelists: Bettina Drake, PhD, MPH, Washington University;
Kathryn Pollak, PhD, Duke University

12:00 PM

Wrap-Up & Adjourn

Electra Paskett, PhD

**Workshop is invitation only; separate registration required*

AWARDS



2022 Joseph F. Fraumeni, Jr. Distinguished Achievement Award **Scarlett Lin Gomez, PhD, MPH *University of California, San Francisco***

The Joseph F. Fraumeni, Jr., Distinguished Achievement Award is presented to an outstanding scientist in the area of preventive oncology, cancer control and/or cancer prevention.

Dr. Gomez has over 20 years of experience as an epidemiologist with research interests in the role of social determinants of health, including race/ethnicity, socioeconomic status, gender, immigration status, sociocultural factors, and neighborhood contextual characteristics, on health outcomes. She is the Director of the Greater Bay Area Cancer Registry, a part of the California Cancer Registry and the NCI Surveillance Epidemiology End Results (SEER) Program. She has contributed surveillance data regarding cancer incidence and outcome patterns and trends for distinct Asian American, Native Hawaiian, and Pacific Islander and Hispanic ethnic groups, as well as cancer patterns by nativity status and neighborhood characteristics. She developed the California Neighborhoods Data System, a compilation of small-area level data on social and built environment characteristics and has used these data in more than a dozen funded studies to evaluate the impact of social and built neighborhood environment factors on disease outcomes. Her publications demonstrating the substantial heterogeneity in cancer patterns across Asian American groups are often cited as the reasons for the importance of disaggregating cancer data for this diverse population. It is because of Dr. Gomez' efforts and advocacy that we have gained an appreciation of the substantial heterogeneity among Asians and Pacific Islanders. She coined the concept of "ethnic enclaves," which refers to neighborhoods with high proportions of the racial/ethnic group of interest. Through the application of this concept, scientists can assess the role of racial/ethnic enclave neighborhoods as predictors of cancer risk and outcomes. Dr. Gomez's work in neighborhood contextual research has inspired and motivated a new generation of cancer research and development of novel methodologic approaches for studies in neighborhoods and cancer.



2022 Joseph Cullen Award in Tobacco Research

Thomas Eissenberg, PhD *Center for the Study of Tobacco Products, Virginia Commonwealth University*

The Joseph W. Cullen Memorial Award is to recognize an individuals distinguished achievement in continued national tobacco control efforts, through research, through the development of prevention and cessation programs with wide-reaching public health impact, or through public policy and advocacy initiatives.

Dr. Eissenberg began exploring methods to assess the effects of novel tobacco products in 1999, was the first to publish a clinical lab study of e-cigarette effects, and the Center for the Study of Tobacco Products (CSTP) team at Virginia Commonwealth University, which Dr. Eissenberg co-directs, was the first to characterize the product characteristics, toxicant output, and nicotine delivery of JUUL e-cigarettes. Dr. Eissenberg's significant achievements in national and international tobacco control are evidenced by 200+ publications in the past 8 years from members of the CSTP scientific team he leads. Over the past two decades, Dr. Eissenberg has been awarded over \$50 million dollars in funds as principal investigator from the National Institutes of Health (NIH) to study tobacco products and has been funded continuously by NIH since 1997. He has nearly 300 publications, predominantly in the area of tobacco control, his h-index on Google scholar is 76, and he is recognized by Clarivate as a Highly Cited Researcher due to having multiple highly-cited papers that rank in the top 1% in Web of Science. Dr. Eissenberg is distinguished by his leadership in bringing together national and international scientists from chemistry, economics, engineering, medicine, public policy, public health, and psychology to generate high-impact and transformative transdisciplinary tobacco regulatory science that can impact federal policy on tobacco products. He has dedicated his career to facilitating safe and ethical research aimed at decreasing tobacco-caused death and disease as a past member of the FDA's Tobacco Product Scientific Advisory Committee and of the DHHS Secretary's Advisory Committee on Human Research Protections. Findings from his work are providing the scientific justification for several tobacco control regulatory policies under consideration including efforts to address menthol flavoring in e-liquids and regulating nicotine emissions from e-cigarette devices. In addition, he has been a generous educator who has mentored numerous junior faculty, postdoctoral fellows and graduate students, 9 of whom have competed successfully for NIH F31 funding.

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)

Ariel Washington, PhD, MSSW, University of Michigan

"Should I Give it to My Kids?": Factors that Influence HPV Vaccine Hesitancy Among African American Parents

LeCario Benashley, BS, University of Arizona

Paclitaxel Treatment Effects on Neurofilament Light Chain (NF-L), a Possible Biomarker of Chemotherapy-Induced Peripheral Neuropathy (CIPN)

ASPO Registration Awards

11th Annual Electra Paskett Registration Scholarship for the Top-Ranked Pre- or Post-doctoral Fellow

Circe LeCompte, MS, ScD, Rutgers Cancer Institute of New Jersey

Understanding Cancer Genetic Risk Assessment Intentions in a Tailored Risk Communication Intervention Randomized Controlled Trial

Other ASPO Registration Awards Chosen from Top-ranked Abstracts

Chelsea Anderson, PhD, University of North Carolina

Adverse Urinary System Outcomes among Older Women with Endometrial Cancer

Moriah Bellissimo, PhD, RD, Virginia Commonwealth University

Changes in Physical Activity, Functional Capacity, and Cardiac Function during Breast Cancer Therapy

Amber Normann, MS, Boston University; DFCI

Improved Sleep Quality Is Associated with Reduced Insulin Resistance in Cancer Survivors Undertaking Circuit, Interval-Based Exercise

Shama Karanth, PhD, University of Florida

The Association Between Cancer and Alzheimer's-Type Neuropathology: A Community-Based Cohort Study

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 work-life balance.

Workshop Faculty

Deborah Glueck, PhD
University of Colorado
School of Medicine

Hazel Nichols, PhD
University of North Carolina

Camille Ragin, PhD, MPH
Fox Chase Cancer Center

Michael Scheurer, PhD, MPH
Baylor College of Medicine

Participatory Concept Mapping and Implementation Developmental Evaluation for BRACE-CHW: a Breast and Cervical Cancer Community Health Worker Intervention with Chinese and Arab communities in Brooklyn

Perla Chebli, PhD, Department of Population Health,
NYU Grossman School of Medicine

Metabolic Health, Obesity-Related Cancers Risk and Prognosis

Prasoon Karra, MS, Nutrition and Integrative Physiology,
University of Utah, Huntsman Cancer Institute

Feasibility, Acceptability, and Effectiveness of a Physical Activity Program for Cancer Survivors with Neuropathic Pain

Brianna Leitzelar, PhD, Department of Social Sciences and
Health Policy, Division of Public Health Sciences,
Wake Forest School of Medicine

Endometrial Cancer Survival and Survivorship among Latinas in California: A Mixed Methods Study

Victoria Rodriguez, MSW, MPH, Health, Society, and Behavior,
University of California, Irvine

Advancing Understanding of the Etiology and Early Detection of Smoking-associated and Other Cancers Using ‘Omics Markers

Meng (Mena) Ru, MS, Epidemiology,
Johns Hopkins Bloomberg School of Public Health

Addressing Breast Cancer Equity Through Virtual Community Oncology Navigation and Engagement (vCONET)

Manisha Salinas, DrPH, Center for Health Equity and
Community Engagement Research, Mayo Clinic

ORAL ABSTRACTS

Monday, March 14 Cancer Health Disparities

“Should I Give it to My Kids?”: Factors that Influence HPV Vaccine Hesitancy Among African American Parents

Washington, A; Chabaan, J; Fakih, A; Ford, S; Rutledge, L; Lilly, J; Clemons, P; Thompson, H.

Presenter: Ariel Washington, PhD, MSSW, University of Michigan

Purpose: The purpose of our study was to describe the influences that impact vaccine hesitancy in African American parents who have previously delayed or denied vaccinating their children against HPV.

Methods: We conducted three focus groups, approx. 90 minutes each. Participants were recruited from various community clinics and organizations in Michigan. Using thematic analysis and the Vaccine Hesitancy Determinants framework, we described the experiences of parents who have delayed or denied vaccinating their children against HPV.

Results: Twenty parents participated in the focus groups; the majority of the parents had Medicaid (75%), were employed full-time (55%), and had some college education but no degree (50%). Several contextual factors influenced decision-making: historical events, perceptions of both pharmaceutical and governmental figures, and perceived discrimination based on race and socioeconomic status. Whether it was the result of mistrust due to the ongoing Flint water crisis or concern over the profit-driven industry of pharmaceutical companies, these parents were deeply mistrustful of the motivations behind vaccination programs. Parental beliefs and attitudes focused on ensuring the health and safety of their children, which involved being hesitant to vaccinate. Some parents were swayed by vaccination experiences of personal acquaintances, while others maintained their hesitancy status. Knowledge and awareness in this group were mixed regarding the HPV vaccine. Most struggled to articulate the purpose of the vaccine thoroughly and often refused to vaccinate their children. Meanwhile, only a few vaccine-specific issues were relevant in group discussions, such as vaccination schedule and provider recommendation. Some parents viewed weak recommendations as a subtle signal to not vaccinate their children, while others viewed too strong of a recommendation as a cause for concern.

Conclusion: Findings highlight parents' willingness to stick with their strong beliefs, despite recommendations from healthcare providers and personal acquaintances. Effective communications strategies are essential for health education and establishing a trust-worthy patient-provider relationship.

Multi-Level Factors Are Associated with Uptake of Cervical Cancer Screening in Sexual and Gender Diverse Adults Residing in Arizona

Nair UN., Madhivanan P., Saad E.R., Adsul P

Presenter: Uma Nair, PhD, University of South Florida

Introduction: Despite availability of effective screening practices for early detection and prevention of invasive cervical cancer, emerging research suggests lesbian, bisexual, and transgender (LBT) individuals are less likely to undergo routine cervical cancer screening (CCS). Systematically examining factors for low CCS uptake in this population using a socioecological lens is key to designing and implementing effective interventions to reduce cancer-related death and disease. As the first step to this approach, the purpose of the study was to examine multi-level factors associated with CCS in LBT adults residing within the state of Arizona.

Methods: Self-identified LBT adults with a cervix between the ages of 18-50 were invited to complete a one-time online survey assessing sociodemographic characteristics, health seeking practices, and CCS behaviors.

Results: Of the 273 participants who completed the study; 62.5% identified as cisgender, 28.7% as transgender/gender nonconforming. Over 35% were gay/lesbian, and 30.8% identified as bisexual. Almost a quarter of participants reported never having received a Pap test. Fifty-four percent of all participants reported feeling uncomfortable discussing their health needs with a healthcare provider and over 60% were unsure of proactively asking their primary care provider for a Pap test. While 75% of participants who reported never receiving a CCS were sexually active in the past 12 months (a risk factor for cervical cancer), 53% were not sure if getting a Pap test was important (vs. 10% of those who received a CCS). Compared to those who had received a CCS, those who had never been screened had significantly lower cancer screening self-efficacy scores ($t=5.18$; $p<.001$) and were less likely to know someone in their social network who had received CCS (70% vs 38%; $p<.001$) suggesting that social norms may impact screening behaviors in this population.

Conclusion: Interventions to increase CCS in this population may need to target proximal (knowledge, self-efficacy) and distal factors (social support, and strategies to improve provider communication strategies) while taking into consideration community-partnership guided participatory and implementation science approaches.

Racial Disparities in Family Variant Testing for Cancer Predisposition Genes

Kassem N, Althouse SK, Monahan P, Hayes L, Nielsen SM, Heald B, Esplin E, Hatchell KE, Ballinger TJ.

Presenter: Nawal Kassem, MD, Indiana University School of Medicine

Purpose: Despite the substantial clinical impact of genetic testing, racial disparities exist in the delivery of this service. Here, we partnered with a commercial laboratory (Invitae) to establish whether there are racial disparities in the uptake of family variant testing (FVT). We also investigated if providing FVT at no cost impacts rates of cascade testing in Black and White families.

Methods: This is a retrospective analysis comparing rates of FVT in self-reporting Black probands to self-reporting White probands who underwent germline genetic testing for genes associated with hereditary cancer through Invitae. All Black and White patients found to have a pathogenic/likely pathogenic variant P/LPV in a hereditary cancer syndrome gene were identified up to one year before and up to one year after FVT became no-charge in 1/2017. The proportion of probands with at least one at-risk family member who underwent FVT was compared between Black and White probands using logistic regression, including the interaction between covariates of cost and race.

Results: Between 1/2016 and 1/2018, 8,530 Black and 87,846 White probands underwent genetic testing. Of these, 9.3% (n=791) Black probands and 11.4% (n=9,998) White probands had a P/LPV identified. The uptake of FVT, defined by percentage of positive probands with at least one family member undergoing testing, was significantly lower in Black participants compared to White participants (11.9% versus 21.7%, odds ratio 0.5, 95% CI 0.4-0.6, p<0.001). Period of testing before or after FVT was no-charge did not impact this difference (p=0.23 for the interaction). FVT rates were significantly lower in Black patients compared to White patients both before (8.1% versus 18.7%, OR 0.4, 95% CI 0.2-0.6, p<0.001) and after (13.6% versus 23.1%, OR 0.5, 95% CI 0.4-0.7, p<0.001) testing became no-charge.

Conclusion: While FVT rates were low overall, they were significantly lower in Black families compared to White families. Cost of FVT did not have a significant impact on the racial disparity seen, suggesting additional barriers exist. Recognizing these disparities and determining the contributing factors are crucial to developing tailored interventions that would ultimately advance racial equity in cancer care.

Sociodemographic Characteristics Associated with COVID-19 Related Delays in Cancer Screenings and Decreased Trust in the Healthcare System among an Urban Cancer Center's Catchment Area Population

Carnahan LR, González JS, Abasilim C, Mersha T, Williams B, McKinnor T, Rinder M, Goudy M, Martinez E

Presenter: Leslie Carnahan, PhD, MPH, University of Illinois at Chicago

Purpose: COVID-19 caused disruptions to cancer screening and contributed to declining trust in the healthcare system. These factors will disproportionately impact those already experiencing health inequities and may lead to adverse cancer outcomes. We examined associations between sociodemographics and COVID-19 related cancer screening delays and decreased trust in the healthcare system.

Methods: A community health needs assessment (CHNA) was conducted in English and Spanish in an urban cancer center's catchment area during 12 community events between July-Sept. 2021. Eligibility criteria included >18 years of age and ability to

verbally consent. The CHNA had 28 items about sociodemographics, the pandemic, cancer screening, and trust in the healthcare system. We examined associations between sociodemographics and COVID-19 related delays in cancer screenings and decreased trust in the healthcare system.

Results: Most of the 385 respondents were female (78%), Hispanic (62%) or non-Hispanic Black (29%), and had a mean age of 48 years. 22% of respondents were uninsured, 28% had public, and 50% reported private or another insurance source, and 21% reported no primary care provider (PCP). Related to COVID-19, 25% of respondents reported delaying screenings and 25% reported a decreased trust in the healthcare system. In bivariate analyses, Hispanics, when compared to non-Hispanic Blacks, were more likely to report a delay (30% v 11%, p=.0003) and decreased trust (29% v 16%, p=.047). Those with no insurance, compared to private, were more likely to report a delay (34% v 20%, p=.032) and decreased trust (33% v 16%, p=.011). Finally, those without a PCP, compared to those with, were more likely to report a delay (37% v 21%, p=.008) and decreased trust (37% v 22%, p=.016).

Conclusion: These findings highlight specific populations (Hispanic, uninsured, and without a PCP) within an urban cancer center's catchment area who may be especially reluctant to re-enter the healthcare space to engage in cancer screenings. Intentional outreach efforts to re-engage these populations, who already experience a disproportionate burden of cancer disparities, will be necessary to address the impact of COVID-19 on cancer outcomes.

Monday, March 14 Survivorship & Health Outcomes

Improved Sleep Quality Is Associated with Reduced Insulin Resistance in Cancer Survivors Undertaking Circuit, Interval-Based Exercise

Normann AJ, Kang D-W, Christopher CN, Norris MK, Die-li-Conwright CM

Presenter: Amber Normann, MS, Boston University; DFCI

Purpose: Cancer patients often experience poor sleep quality, typically induced by cancer-related treatments, a sedentary lifestyle, and psychological distress, leading to an increased risk of metabolic dysregulation such as obesity and insulin resistance. In this novel 16-week pilot study, we examined the effect of a circuit-based aerobic and resistance exercise intervention on self-reported sleep quality in breast, prostate, and colorectal cancer survivors and explored the association between changes in sleep quality and insulin resistance.

Methods: Survivors of breast, prostate or colorectal cancers who were sedentary, overweight or obese (BMI>25.0 kg/m²) were randomized to exercise (n=60) or usual care (n=30). The 16-week intervention included supervised moderate-vigorous aerobic (65-85% of VO₂max) and resistance (65-85% of 1-repetition maximum) exercise performed in a circuit, interval fashion three times per week. Patient-reported sleep quality and insulin resistance were assessed at baseline and post-intervention using Pittsburgh Sleep Quality Index (PSQI) and Homeostasis Model of Assessment (HOMA-IR), respectively. Mean changes in PSQI score that are negative demonstrate improvements in sleep. Between-group differences were determined using repeated-measures analysis of variance.

Associations between changes in PSQI and insulin resistance were computed using Pearson correlations.

Results: Participants were 63.2 ± 10.8 years old, obese (87%), female (55%), and completed chemotherapy + radiation therapy (75%). Adherence to the intervention was 92% and the retention rate was 100%. Post-intervention, the PSQI global score improved significantly in the exercise group when compared to usual care (mean between-group difference, -2.7; 95% CI, -4.2 to -0.6). Change in PSQI was inversely associated with change in HOMA-IR ($r = -0.91$; $p < 0.01$) among the exercise group.

Conclusions: A circuit, interval-based aerobic and resistance exercise intervention improved patient-reported sleep quality in breast, prostate, and colorectal cancer survivors. Additionally, this exercise-induced improvement in sleep-quality may result in reduced insulin resistance.

An Analysis of Factors Related to Care Engagement along the Cancer Survivorship Care Continuum for Cancer Survivors in Florida

Mobley EM, Smotherman C, Fishe JN, Anton S, Braithwaite D, Gurka MJ, Gutter MS, Parker AS

Presenter: Erin Mobley, PhD, MPH, University of Florida

Purpose: This study identifies factors associated with care engagement along the cancer survivorship care continuum for Floridians.

Methods: We identified patients from the OneFlorida Data Trust with a cancer diagnosis at any age and encounters from 2012-2020. Multivariable logistic regression models produced odds ratios (OR) predicting 1) any outpatient non-acute care visit, 2) cancer-related visit with any provider, 3) cancer-related visit with a cancer provider, and 4) survivorship visit with a cancer provider. Encounter-based independent variables were insurance, Social Deprivation Index quartile, and Rural Urban Continuum Area (adjusted for age, sex, race, ethnicity, and treatment).

Results: 662,489 survivors were included in the sample. Those with Medicaid and dual eligible status (Medicare and Medicaid) were more likely to have an outpatient visit (Medicaid OR 2.02, 95%CI 1.93-2.12; dual eligible 3.06, 2.91-3.22) or a cancer-related visit with a cancer provider (Medicaid 1.82, 1.77-1.86; dual eligible 1.32, 1.28-1.35), and less likely to have a survivorship visit (Medicaid 0.27, 0.26-0.28; dual eligible 0.20, 0.19-0.21). Uninsured survivors were less likely to have all visit types, while those with Medicare were more likely. Those from the most socially deprived areas were more likely to have an outpatient visit (1.09, 1.03-1.14) and less likely to have a cancer-related visit with any provider (0.90, 0.88-0.92) or a cancer provider (0.93, 0.91-0.95). Survivors from non-metropolitan areas were more likely to have an outpatient visit (1.38, 1.22-1.56), cancer-related visit (1.22, 1.16-1.28), cancer-related visit with a cancer provider (1.45, 1.39-1.52), and a survivorship visit (1.34, 1.22-1.48).

Conclusions: Survivors who have public insurance are more likely to have outpatient visits, and those with Medicaid or dual eligible status are less likely to have survivorship visits. Uninsured status is

consistently associated with lack of engagement across the care continuum. Those from areas with higher social deprivation are more likely to have outpatient visits, but less likely to have a cancer-related visit with or without a cancer provider. Survivors from non-metropolitan areas are more likely to engage in all visit types along the care continuum.

Health-Related Quality of Life in Adolescents and Young Adults With and Without Cancer, Using Propensity Score Matching

Choi E, Becker H, Jung H

Presenter: Eunju Choi, PhD, University of Texas MD Anderson

The number of adolescents and young adults (AYAs) cancer survivors are growing because of the increased cancer incidence and survival rate in this population. This age group is often aggregated with older or younger cancer populations, which hides critical differences in tumor biology, cancer distribution, and cancer survivorship. AYAs with cancer are more likely to have a high risk of late and long-term effects. Yet despite this high risk of late and long-term effects, little is known about developing chronic comorbidities, health practices, and health services utilization among AYAs with cancer. Therefore, the aim of this study is to assess chronic comorbidities, health practices, health services, and HRQOL among AYAs with and without cancer, using Andersen's behavioral model of health services use.

We used a cross-sectional, matched case-control design; data were from the Texas Behavioral Risk Factor Surveillance System for 2015-2019. AYAs aged between 18 and 39 years and with cancer were matched to controls using propensity score matching to control for predisposing (age, sex, race/ethnicity, and education) and enabling (employment, marital status, income, and health insurance) factors. Weighted chi-square tests were used to compare differences in need for care, health practices, and health services utilization between AYAs with cancer and controls without cancer. Multiple logistic regression models were used to compare HRQOL outcomes.

The final study sample consisted of 276 AYAs diagnosed with cancer and 828 controls, after propensity score matching. The AYAs with cancer were more likely to have chronic comorbidities, smoke, and avoid health services utilization because of cost in comparison with the matched controls. Multiple logistic regression showed significant differences in HRQOL between AYAs with cancer and controls: AYAs with cancer were more likely to have worse general health (OR = 2.488; 95% CI, 1.305-4.741) and worse perceived cognitive function (OR = 2.070; 95% CI, 1.076-3.919).

AYAs with cancer experience more chronic comorbidities, smoking, financial barriers to health service, and worse HRQOL than do AYAs without cancer. Thus age-appropriate tailored surveillance and survivorship support/resources are needed for AYAs with cancer.

Risk of Fetal Death in a Population-Based Sample of 65,000 Adolescent and Young Adult Women with a History of Cancer

Murphy CC; Betts AC; Lupo PJ; Allicock M; Shay LA; Preston-SM; Pruitt SL

Presenter: Caitlin Murphy, PhD, MPH, UTHHealth School of Public Health

Purpose of the study: To estimate risk of fetal death in adolescent and young adult (AYA) women with a history of cancer.

Methods: We identified women diagnosed with cancer at ages 15-39 years between January 1, 1995 and December 31, 2015 using population-based data from the Texas Cancer Registry. We linked these data to fetal death certificates to identify fetal deaths through December 31, 2016. Fetal death certificates are filed for fetuses weighing ≥ 350 grams or gestational age ≥ 20 weeks. We estimated a standardized fetal mortality ratio of observed fetal deaths per 1,000 live births in AYA women to expected fetal deaths per 1,000 live births in women without cancer, summed across strata of age and race and ethnicity. We also estimated cumulative incidence of fetal death, accounting for AYA death as a competing event.

Results: A total of 65,804 AYA women with cancer (54.6% non-Hispanic White, 12.3% non-Hispanic Black, 33.0% Hispanic) contributed 522,819 person-years of follow-up; 69 fetal deaths occurred to 64 women after diagnosis. Mean time from diagnosis to first post-diagnosis fetal death was 4.4 years (SD=3.4 years); mean gestational age at fetal death was 27.9 weeks (SD=7.1 weeks). The fetal mortality rate in AYA women was 27% higher than the general population (standardized fetal mortality ratio 127.4, 95% CI 98.9, 161.5). Cumulative incidence of fetal death was 0.07% (95% CI 0.05, 0.09) at five years and 0.11% (95% CI 0.08, 0.14) at ten years after diagnosis. Five-year cumulative incidence of fetal death differed by cancer type, race and ethnicity, and age at diagnosis (all $p < 0.01$). For example, five-year cumulative incidence ranged from 0.01% (95% CI 0.00, 0.05) for breast cancer to 0.13% (95% CI 0.07, 0.22) for thyroid cancer. Five-year cumulative incidence was higher in non-Hispanic Black (0.13%, 95% CI 0.06, 0.23) and Hispanic (0.10%, 95% CI 0.06, 0.15) compared to White (0.04%, 95% CI 0.02, 0.06) women.

Conclusions: Although overall risk is low, AYA women experience excess fetal deaths compared to women without cancer, especially non-Hispanic Black and Hispanic women. Findings should inform fertility counseling for AYA women, and future studies should examine mechanisms of disparities and strategies to improve birth equity for AYA women.

Tuesday, March 15 Lifestyles Behavior, Energy Balance & Chemoprevention

Changes in Physical Activity, Functional Capacity, and Cardiac Function during Breast Cancer Therapy

Bellissimo MP, Canada JM, Jordan JH, Ladd AC, Heiston EM, Brubaker P, Mihalko SL, Reding K, D'Agostino Jr R, O'Connell

N, Hackney MH, Weaver KE, Lesser GJ, Avis NE, Hundley WG

Presenter: Moriah Bellissimo, PhD, RD, Virginia Commonwealth University

Purpose: Functional capacity and cardiac function can decline during breast cancer (BC) therapy. In non-cancer populations, higher physical activity (PA) is associated with better physical function and cardiac health. This study compared baseline PA, functional capacity, and cardiac function between women with and without BC and tested if greater PA participation was related to higher functional capacity and/or better heart function after three months of BC therapy.

Methods: Data was collected in 104 women without BC (82% Caucasian, baseline only) and 110 women with stage I-III BC (82% Caucasian) before therapy and after three months of treatment. Participants self-reported PA and underwent six-minute walk distance (6MWD) testing to measure functional capacity and cardiovascular magnetic resonance to assess left ventricular ejection fraction (LVEF). Analyses were adjusted for age, race, body mass index (BMI), and medication use.

Results: The BC group was older (56.2 ± 10.7 vs 52.1 ± 14.7 yrs, $P=0.02$) with a higher average BMI than the non-cancer group (30.3 ± 6.8 vs 27.7 ± 6.2 kg/m², $P<0.01$). Pre-treatment, BC participants reported lower PA scores (27.9 ± 2.8 vs 34.9 ± 2.8 , $P=0.04$) with similar 6MWD and LVEF relative to those without cancer (485 ± 11 vs 496 ± 11 m, $P=0.4$ and 59.7 ± 0.7 vs $58.9 \pm 0.8\%$, $P=0.37$, respectively). After three months of BC therapy, declines were observed for PA scores (27.9 ± 2.8 vs 18.3 ± 2.5 , $P=0.02$), 6MWD (485 ± 11 vs 428 ± 10 m, $P<0.001$), and LVEF (59.7 ± 0.7 vs $56.1 \pm 0.7\%$, $P<0.001$). Compared to BC participants who reported no PA at three months ($n=24$, 22%), BC women who reported any PA ($n=78$, 86%) had higher 6MWD (442 ± 11 vs 389 ± 17 m, $P=0.006$) but similar LVEF (56.5 ± 0.9 vs $55.3 \pm 1.5\%$, $p=0.5$). Women who reported any PA were less likely to exhibit an LVEF below normal ($<50\%$) or decline in LVEF of ≥ 10 points compared to inactive women (BMI-adjusted, OR [95% CI]: 0.27 [0.09, 0.85]).

Conclusions: These preliminary results indicate that self-reported PA, LVEF and 6MWD decline in the first three months of BC treatment, but PA participation during BC treatment may mitigate declines in functional capacity and cardiac function. Further research is needed to identify barriers and facilitators of PA participation during BC therapy.

Funding: Data collection was funded by the Wake Forest NCORP Research Base grant 2UG1CA189824 with support of the NCI Community Oncology Research Program (NCORP). Additional funding for this study was provided by grants from the National Institutes of Health, National Cancer Institute (1R01CA199167 and 5T32CA093423).

Clinical Trial ID: NCT02791581 for WF97415 UPBEAT

Type-2 Diabetes Mellitus and Risk of Colorectal Polyps: A Colonoscopy-Based Study Using Natural Language Processing

Hardikar S, Krick B, Benson R, Winn M, Winterton C, Newcomb PA, Inadomi JM, Ulrich CM

Presenter: Sheetal Hardikar, MBBS, PhD, MPH, University of Utah

Purpose: Although type-2 diabetes (T2D) has been associated with colorectal cancer in previous studies, the association of T2D with colorectal polyps is unknown.

Methods: Using pathology reports from the University of Utah (UU) Enterprise Data Warehouse (EDW), we developed a rule-based natural language processing (NLP) pipeline to extract colorectal polyp diagnoses and features (site, shape, number, size) on 15,679 patients who underwent a colonoscopy at the UU Gastroenterology clinic from 2013-2016. The NLP pipeline was validated by manual abstraction of 350 pathology reports, and demonstrated excellent performance (accuracy 91%). Patient characteristics, including age, sex, race, diabetes status, smoking, BMI, and medication use, were abstracted from the EDW. Odds ratios (OR) and 95% confidence limits (95% CI) adjusted for abstracted variables were calculated using multivariable polytomous logistic regression.

Results: Participants were on average 56 years old, 85% White, 50% male, with a mean BMI of 29 kg/m². About 27% of the participants reported history of T2D; 71% of whom used anti-diabetes medication. Participants were classified as having adenomas (30%), serrated polyps (16%), synchronous adenomas and serrated polyps (19%) or as polyp-free controls (35%). T2D was associated with a statistically significant lower risk of colorectal polyps [0.83(0.73,0.92)]. When evaluated by polyp subtype, T2D was marginally associated with reduced adenoma risk [0.90(0.80,1.02)], and inversely associated with risk of serrated polyps [0.80(0.67,0.93)]. The associations did not vary by lesion severity within polyp subtypes. There was a statistically significant decreased risk for polyps among anti-diabetes medication users [0.84(0.69,0.99)].

Conclusions: Overall, T2D was associated with a statistically significant reduced risk of colorectal polyps; this reduced risk was consistent for both adenomas and serrated polyps. As T2D has previously been shown to increase colorectal cancer risk, this differential association with colorectal polyps may possibly be due to a variable effect of anti-diabetes medication use. Further studies are needed to better understand the mechanisms through which diabetes and its treatment may be differentially associated with colorectal polyps.

Socioeconomic and Geographic Predictors of Poor Diet Quality in a Large U.S. Cohort of Adult Men and Women

McCullough ML, Chantaprasopsuk S, Islami F, Um C, Res-Punia E, Wang Y, Leach C, Sullivan L, Patel AV

Presenter: Marjorie McCullough, ScD, RD, American Cancer Society

Purpose: Poor diet quality is an important determinant of obesity and chronic disease risk. A better understanding of social, economic and geographic factors associated with diet quality can inform public health and policy efforts for advancing health equity.

Methods: This cross-sectional analysis of 155,331 adult men and women in the American Cancer Society (ACS) Cancer Prevention Study-3 examined race/ethnicity, socioeconomic (individual-level education and income), and geographic (metropolitan to rural dwelling, residence in food desert) predictors of poor diet quality, mutually adjusted using multivariable logistic regression models. A diet score reflecting concordance with the 2020 ACS dietary recommendations for cancer prevention based on intake of fruit, vegetables, whole grains, red and processed meats, sugar-sweetened beverages (SSBs) and highly processed foods was calculated from responses to a validated food frequency questionnaire, with scores ranging from 0 (worst) to 12 (best) diet quality, and scores 0-3 representing poor diet quality.

Results: All socioeconomic and geographic characteristics assessed were statistically significant, independent predictors of poor diet quality. Compared to White participants, Black participants had a 16% higher likelihood of poor diet quality, while Hispanic/Latino and Asian/Native Hawaiian/Pacific Islander participants had 16% and 33% lower risk of poor diet quality, respectively. Higher income and education were linearly associated with better diet quality among White participants, but not among other racial/ethnic groups. Even after controlling for other characteristics, non-metropolitan residence was associated with a 61% higher risk of poor diet quality. Additionally, residence in a food desert was associated with a 17% higher risk. All diet score components contributed to disparities observed, particularly red and processed meat and SSBs.

Conclusions: Race/ethnicity, socioeconomic and geographic factors independently predicted risk of poor diet quality among a large, diverse adult U.S. population. These findings contribute information to more effectively target behavioral interventions, programs, and policies to improve diet quality for populations at highest risk.

Sedentary Time and Breast Cancer Risk in the Sister Study Cohort

Donzella SD, Diaz Santana MV, O'Brien KM, Von Holle A, Sandler DP, Weinberg CR

Presenter: Sidney Donzella, MPH, University of Washington

Purpose of the study: We investigated the association between sedentary time (ST) and breast cancer (BC) risk among women in the Sister Study, and explored possible differences by race/ethnicity, menopausal status at diagnosis, and estrogen receptor (ER) status. **Methods:** The Sister Study is a prospective cohort of 50,884 women aged 35-74 years who had no history of BC but had at least one sister with BC. ST was collected at the first detailed follow-up (~ 2 years after enrollment) and BC diagnoses (invasive and ductal carcinoma in situ) were reported annually. We used multivariable Cox proportional hazard regression to estimate the hazard ratios (HR) and 95% confidence intervals (CI) for the association of continuous ST (hours/day) and ST categories (≤ 5

hours/day (referent), 6-9 hours/day, and ≥ 10 hours/day) with BC diagnosed after first follow-up, with age as the primary time scale, adjusting for race/ethnicity, education, BMI, physical activity (MET hours/week), and number of pregnancies. Postmenopausal time was allowed a distinct baseline hazard by treating menopause as time-dependent. We explored effect measure modification by race/ethnicity and menopausal status at diagnosis. We used case-only multivariable logistic regression to examine etiologic heterogeneity by ER-negative versus ER-positive tumor types. Results: Among the 40,459 women included in this analysis, 35% reported 6-10 hours/day of ST, and 20% reported ≥ 10 hours/day of ST. ST (6-10 vs. ≤ 5 adjusted HR (aHR)=1.15 95% CI=1.05, 1.26; ≥ 10 vs. ≤ 5 aHR=1.12 95% CI=1.01, 1.25) was associated with increased BC risk. The association varied by menopausal status (p-heterogeneity<0.001), with hours spent in ST positively associated with postmenopausal BC (6-10 vs. ≤ 5 aHR=1.20 95% CI=1.10, 1.31; ≥ 10 vs. ≤ 5 aHR=1.26 95% CI=1.14, 1.39) and inversely associated with premenopausal BC (≥ 10 vs. ≤ 5 aHR=0.74 95% CI=0.57, 0.95, p-trend 0.04). There was no difference in the HRs by race/ethnicity (p-heterogeneity=0.96). Among those who developed BC, ST (≥ 10 vs. ≤ 5 aOR=1.22 95% CI=0.92, 1.62) was associated with increased odds for ER-negative relative to ER-positive disease. Conclusions: Increased ST was associated with increased risk of BC, especially post-menopause.

Tuesday, March 15 Behavioral Science & Health Communication

IMPACT: A Randomized Controlled Trial of an mHealth Physical Activity Intervention for Young Adult Cancer Survivors

Valle CG, Diamond M, Pinto BM, LaRose JG, Nezami BT, Hales DP, Deal AM, Heiling H, Rini CM, Rosenstein DL, Tate DF

Presenter: Carmina Valle, PhD, MPH, Univ of North Carolina at Chapel Hill

Purpose: The IMPACT trial evaluated a theory-based mobile physical activity (PA) intervention on total PA (primary) and moderate-to-vigorous (MVPA) at 6 months in a nationwide sample of young adult cancer survivors (YACS).

Methods: YACS (N=280) were randomized to either an intervention group or a self-help (control) group. All participants received digital tools (activity tracker, smart scale, Facebook group) and an individual videochat session. Intervention participants also received a 6-month mHealth program with components to promote increased PA (behavioral lessons, adaptive goal-setting, tailored feedback, tailored text messages, Facebook group prompts). PA was assessed via accelerometry and online questionnaire (Godin Leisure Time Exercise Questionnaire) at baseline and 6 months. Using linear mixed models and an intention-to-treat approach, we tested for group differences in changes from baseline to 6 months, adjusting for education, time since diagnosis, age, and accelerometer wear time.

Results: Of 280 YACS (M=33.4 (SD 4.8) yrs, 81.8% women, 23.2%

racial/ethnic minority individuals), 92.9% completed 6-month measures. Device-measured total PA min/wk (i.e., sum of light, moderate, and vigorous PA) increased from a mean of 1974.3 (SD=673.9) to 2024.3 (686.7) at 6 months in the intervention group (p=.26) and from 1814.9 (704.5) to 1877.7 (758.2) in the control group (p=.43), with no difference between groups (p=.84). Both groups increased MVPA min/wk over 6 months; increases were 24.7 min/wk (95% CI: 14.8, 34.6; p<.0001) in the intervention versus 11.4 min/wk (95% CI: 1.4, 21.4; p=.02) in the control (p=.07 between groups). Increases in MVPA were 99.7% and 41.6% over baseline in the intervention and control groups, respectively. Increases in self-reported total PA were significant; 123.3 min/wk (95% CI: 94.5, 152.1; p<.0001) in the intervention versus 83.40 (95% CI: 49.30, 117.50; p<.0001) in the control (p=.08 between groups).

Conclusions: While both groups increased total PA over 6 months, the intervention doubled the increase in MVPA min/wk relative to the control group, which is associated with important health benefits. Future research should examine moderators of effects to identify for whom, and under what conditions, the effectiveness varied.

Understanding Cancer Genetic Risk Assessment Intentions in a Tailored Risk Communication Intervention Randomized Controlled Trial

LeCompte CG, McDougall J, Walters ST, Toppmeyer D, Boyce TW, Lu S, Stroup A, Paddock L, Grumet S, Lin Y, Ani J, Heidt E, Kinney AY

Presenter: Circe LeCompte, MS, ScD, Rutgers Cancer Institute of New Jersey

Background: Pathogenic variants in cancer predisposition genes increase second, hereditary cancer risk among women with breast and/or ovarian cancer, and primary cancers in their relatives. National guidelines recommend cancer genetic risk assessment (CGRA) (genetic counseling and/or genetic testing) for women at increased hereditary breast and ovarian cancer (HBOC) risk. Yet, less than half of high risk women, including rural dwellers and racial minorities have accessed CGRA.

Purpose: The Genetic Risk Assessment for Cancer Education and Empowerment Project (GRACE), a superiority trial, addressed this translational gap, testing the efficacy of a targeted print brochure (TP) vs tailored counseling and navigation (TCN) vs usual care (UC) on CGRA intentions. TCN targeted behavioral variables theorized to mediate CGRA intentions. We believe GRACE is the first study of its kind promoting guideline-based CGRA to women at increased HBOC risk.

Methods: CGRA-eligible women were recruited from three state cancer registries (N=641), completed a baseline survey, and randomized to TCN, TP or UC. TP and TCN received the mailed educational brochure. TCN also engaged in a telephone-based decision coaching and navigation session using motivational interviewing and tailored materials based on the Extended Parallel Process Model and Health Action Process Approach. Participants completed a follow-up survey at one month.

Results: TCN improved CGRA intentions compared to TP (0.64, $p<0.001$, CI 0.32, 0.97) and UC (0.69, $p<0.001$, CI 0.37, 1.02). Theoretical targets, perceived risk (0.77, $p=0.02$, CI 0.11, 1.44) and self-efficacy (0.67, $p=0.04$, CI 0.05, 1.28) mediated CGRA intentions in TCN. Stratification showed increases in CGRA intentions for TCN vs TP among non-Hispanic Whites, Hispanics, urban dwellers, and women with low health literacy and no family history of breast and/or ovarian cancer (FBOC). In TCN, perceived self-efficacy improved in women with no FBOC.

Conclusions: Improvements in CGRA intentions and theorized mediators support use of tailored risk communication interventions in Hispanics and women with low health literacy and no FBOC. Further tailoring may improve CGRA intentions in Blacks, other minorities, rural dwellers, and women with high health literacy and FBOC.

Does Neighborhood Social Cohesion Influence Participation in Routine Cancer Screening? Findings from a Representative Sample of Adults in South Florida

Baeker Bispo JA, Goo I, Ashad-Bishop K, Kobetz E, Bailey Z

Presenter: Jordan Baeker Bispo, PhD, Epidemiology, University of Miami

Purpose: Neighborhood social cohesion (NSC) has been associated with a variety of favorable health outcomes, but limited research has examined its impact on health behaviors that support cancer control. The purpose of this study was to examine associations between perceived NSC and utilization of breast, cervical and colorectal cancer screening in South Florida.

Methods: From 2018 to 2019, a cross-sectional telephone survey was administered to a representative sample of 716 adults in four South Florida counties (Miami-Dade, Broward, Palm Beach and Monroe). NSC was measured utilizing a previously validated 5-item instrument with a scale from one to five, with higher scores reflecting greater cohesion. Adherence to US Preventive Services Task Force screening guidelines was evaluated for age- and sex-eligible respondents with no cancer history. Associations between NSC and screening adherence were examined using weighted logistic regression models, with adjustment for sociodemographic characteristics, including age, sex, race and ethnicity, household income, nativity, and insurance status.

Results: Among screening-eligible respondents, 75.9% were up-to-date with mammography, 71.3% with receipt of a Pap smear, and 59.8% with colorectal cancer screening by blood stool sampling, colonoscopy or sigmoidoscopy. The mean NSC score was 3.6 (SE=0.04). In fully adjusted analyses, the odds of adherence to breast cancer screening guidelines increased 2.8-fold (95% CI: 1.5-5.1) for every one-unit increase in NSC. Point estimates for ORs describing the association between NSC and cervical cancer screening suggested a negative association, but the results were not statistically significant (aOR = 0.78, 95% CI = 0.51 - 1.19). NSC was not statistically significantly associated with colorectal cancer screening.

Conclusions: These data suggest that NSC supports some cancer screening behaviors, namely the timely receipt of mammography. In future studies, disaggregating the effect of NSC by sex, race, ethnicity, and other factors associated with inadequate preventive care may advance our understanding of the heterogeneous relationship between social cohesion and screening behaviors for different cancer sites.

Acceptability of Mailed HPV Self-Testing Kits among Patients of a Large Urban Safety-Net Healthcare System

Parker SL, Daheri M, Benavides E, Kasbaum M, Escobar B, Chiao EY, Schmeler K, Anderson ML, Deshmukh A, Hilsenbeck SG, Jibaja-Weiss ML, Bulsara S, Zare M, Scheurer ME, Montealegre JR

Presenter: Susan Parker, MPH, Baylor College of Medicine

Background: At-home self-sample HPV testing kits have been demonstrated to increase cervical cancer screening among underscreened women. To our knowledge, the acceptability of HPV self-test kits has not been assessed by group among patients of a large urban safety net health system that provides services to predominantly racial/ethnic minority, medically underserved populations. We aimed to describe and compare acceptability of mailed HPV self-test kits between groups among underscreened women in a large urban safety net health care system.

Methods: We assessed the acceptability of mailed HPV self-test kits as part of a randomized controlled trial to evaluate the effectiveness of the kits. Participants are women, ages 30-65 years in an urban safety net healthcare system who are underscreened for cervical cancer. We conducted a telephone survey in English and Spanish among a subgroup of trial participants who were randomized to receive the at-home HPV self-test kits. We performed chi square tests to assess differences between groups. Significance was determined at $p<0.05$.

Results: Among the 123 women who have completed the survey to date, the majority are Hispanic (70.7%) and Black or African American (20.3%). Among the women who reported using the kit, 87.7% said the kit was easy to use. Most women who used the kit (88.9%) reported that the kit was just as or more convenient than getting a Pap and 96.3% would be somewhat or very willing to use a self-sampling kit again. There were no significant differences in reported ease of use, convenience or willingness to use again between ethnic groups, language spoken (Spanish or English), insurance coverage or education level.

Conclusion: Our survey suggests high acceptability of mailed HPV self-test kits among diverse groups of women in an urban safety-net healthcare system.

POSTER DIRECTORY

NO.	TRAINEE	LAST NAME	POSTER TITLE
94		Algotar	Effect of Comprehensive Lifestyle Modification Intervention on Health-Related Quality of Life in Prostate Cancer Survivors on Androgen Deprivation Therapy
89	T	Anderson	Adverse Urinary System Outcomes among Older Women with Endometrial Cancer
48		Anyanwu	Racial and Ethnic Differences in 60-Day Hospital Readmissions for Patients with Breast, Colorectal, Lung, and Prostate Cancer
29	T	Babel	Cardiovascular Health Among Black Breast Cancer Survivors in the Women's Circle of Health Follow-Up Study
78		Ballinger	Proton Pump Inhibitor Use and Obesity-Associated Cancers in the Women's Health Initiative
80		Baxter	Rice Bran and Navy Bean Intake Alters the Amino Acid Profile and Healthy Eating Index of Adults at Risk for Colon Cancer
98	T	Benashley	Paclitaxel Treatment Effects on Neurofilament Light Chain (NF-L), a Possible Biomarker of Chemotherapy-Induced Peripheral Neuropathy (CIPN)
47		Bertrand	Prevalence of Monoclonal Gammopathy of Undetermined Significance (MGUS) in U.S. Black Women
97	T	Betts	Impact of COVID-19 on a Nationally Representative Sample of Adolescent and Young Adult Cancer Survivors
77		Bird	Multilevel Determinants of Tobacco Dependence Treatment Program Implementation in NCI-Designated Cancer Centers in the Cancer Center Cessation Initiative
72	T	Blittoni	Dietary Patterns and Clinical Characteristics of BEWELL Study Participants: A Cohort at High-Risk for Lung Cancer (NCT04267874)
95		Bowles	Endocrine Therapy Initiation Within the First Year of Diagnosis for Invasive, Hormone Receptor-Positive Breast Cancer from 2001-2016, the Kaiser Permanente Breast Cancer Survivors' Cohort
99	T	Brandt	Risk of Second Primary Cancers by Race and Ethnicity among Breast Cancer Survivors
42		Carroll	Multi-Level Factors Reported in Colorectal Cancer Screening Adherence Studies Reflect Evolving Challenges and Opportunities in Different Care Settings: A Systematic Review
30		Champion	Comparative Effectiveness of Interventions to Improve Screening for Three Cancers among Rural Women: A Randomized Trial
55	T	Chebli	SPEED-HPV: School-Based Pediatric Clinics to Educate and Enable Delivery of HPV Vaccination
19	T	Chebli	Using Social Marketing Theory to Inform a HPV Vaccine Campaign with Arab and Mexican American Communities in Brooklyn
68		Conley	The Role of Primary Care Providers in Breast Cancer Risk Assessment and MRI Referral: A Mixed-Methods Study
32	T	Cooks	Deploying Virtual Clinicians to Reduce Racial Disparities in Young-onset Colorectal Cancer: Experiences of Black Adults with a Culturally-tailored Telehealth Intervention
45	T	Cooks	Positioning Virtual Clinicians as a Tool to Reduce Colorectal Cancer Disparities in Rural Communities: The Impact of Identity on Evaluations of Virtual Clinician Appearance
3		Crane	Analysis of Emoji Use in SMS-Based Lifestyle Interventions Applied to the ¡Mi Vida Saludable! (MiVS) Study
82	T	Diaz Santana	The Association Between Marijuana Smoking and Breast Cancer Risk
81	T	Dunston	Telehealth Exercise among Older Cancer Survivors: Who Is Participating and How Much?
79	T	Edmonds	Racial Differences in Weight Perception among Black and White Breast Cancer Patients
66		Entenman	Self-Sampling for Cancer Screening Is Acceptable and Feasible for Providing Early Detection to Underserved, High-Need Patients
84		Epplein	Association of Helicobacter Pylori and Autoimmune Gastritis with Stomach Cancer in a Cohort of Young Finnish Women
37		Fernandez	Examining Barriers to Implementing Evidence Based Interventions for Colorectal Cancer Screening in Federally Qualified Health Centers: A Multi-method Approach

9		Fleisher	Just In Time Health Communication: Using the Electronic Medical Records (EMR) to Deliver Tailored Patient Education
57		Fleisher	Themes from the Impact of 2020 on Research Productivity in Primarily Underrepresented Minority (URM) Scholars via Survey: The Geographic Management of Cancer Health Disparities Program (GMAP) Response
2	T	Glasgow	All Those in Favor Say Yay: Predicting Support for Public Health Policies
44		Glenn	Parental Influence on HPV Vaccination among Latinx Adolescents Receiving Care from a Large Federally Qualified Health Center in Los Angeles County
63	T	Gottschlich	HPV-Based Screening at Extended Intervals Misses Fewer Cervical Precancers than Cytology: Evidence from the HPV FOR Cervical Cancer (FOCAL) Trial
100		Hardikar	Survival Outcomes in Stage I-III Colorectal Cancer Patients over 65 Years of Age: Results from the National Cancer Database
11	T	Hathaway	Predictors of COVID-19 Vaccine Acceptance Among Cancer Patients
49		Hayes	Racial and Insurance Type Coverage Differences in Lung Cancer Screening Utilization in a Lung Cancer Screening Program
67	T	Hirsch	Significance of a Shared Decision-Making Consultation on Lung Cancer Screening Efficacy
28		Ho	Cardiovascular Disease Mortality among Breast Cancer Survivors in the US by Socioeconomic Status and Rurality, 2000-2018
85		Houghton	Breast EMICS (Early Moments Informing Cancer Screening) in the Time of “Omics”
76	T	Huang, X	Maternal Occupational Physical Activity and Risk of Cancer Among Offspring in Denmark 1968-2016
71	T	Huang, Y	Change in Fruit/Vegetable Intake and Physical Activity Not Mediated by Patient-Reported Quality of Life among Latina Breast Cancer Survivors in a Diet and Physical Activity Intervention
73	T	Hurwitz	Does Polygenic Risk Score Modify the Association Between Frequent Aspirin Use and Ovarian Cancer Risk? An Analysis Within the Ovarian Cancer Association Consortium (OCAC)
27		Jones	Cancer Health Awareness through Screening and Education (CHANGE): A Community Approach to Healthy Equity
83	T	Jovanovic	The Whole Food Plant-Based Diet (WFPBD) Survey: Pros and Cons of a WFPBD Among US Adults
74	T	Kalam	Effect of 10-hours Time Restricted Diet on Breast Cancer Risk in Pre and Postmenopausal Women with Overweight or Obesity: TRED Pilot Study
101	T	Karanth	The Association Between Cancer and Alzheimer’s-Type Neuropathology: A Community-Based Cohort Study
62	T	Karra	Ceramides Are Associated with Increased Cancer Risk in the Utah Obesity Cohort Study
86	T	Kehm	Oxidative Stress and Breast Tissue Composition in Adolescent Girls and Their Mothers
6		Kepka	COVID-19 Vaccination Intent, HPV Vaccination Receipt, and Dimensions of Vaccine Hesitancy
56		Khan	The Impact of Marital Status on Tumor Aggressiveness and Treatment among Black and White Men Diagnosed with Prostate Cancer in the North Carolina-Louisiana Prostate Cancer Project (PCaP)
21		Kohler	Adapting and Implementing Tailored Text Messaging to Improve Adherence to Cervical Cancer Screening Management
87	T	Koroukian	Variation in KRAS/NRAS/BRAF Mutation Status by Age, Sex and Race/Ethnicity Among Patients with Metastatic Colorectal Cancer (mCRC)
41		Korous	Masculinity Barriers to Colorectal Cancer Screening Completion among American Indian/Alaska Native, Black, and White men (ages 45 - 75)
26		Kushalnagar	Black and Deaf: Left Behind in Cancer Screening
12		Lacson	Predictors of Genetic Risk Recall in a Randomized Melanoma Precision Prevention Trial
1	T	Lawson-Michod	A Qualitative Analysis of the Pathways to Ovarian Cancer Diagnosis
20	T	Lee, C	Worksite Weight Loss Program for Cancer Prevention among School District Employees with Overweight and Obesity
31	T	Lee, E	Comparing the Impact of Interventions on Psychosocial Facilitators to Breast Cancer Screening among Latinas
53		Leist	Renal Cell Carcinoma Surgical Treatment Disparities in American Indians
15	T	Leitzelar	Understanding Attitudes toward Physical Activity for Cancer Survivors with Neuropathic Pain through Stakeholder Engagement

52		Lent	Racial/Ethnic Disparities in Health and Life Insurance Denial Due to Cancer among Cancer Survivors
46	T	Leopold	Prevalence and Predictors of Access to Prostate Cancer Screening among New York City Taxi/For-Hire-Vehicle (FHV) Drivers
70	T	Li	Associations of Physical Activity and BMI with Survival and Recurrence in Stage I-III Colorectal Cancer Patients: Results from the ColoCare Study
4	T	Lindley	Associations Between Inflammation and Angiogenesis Biomarkers and Cancer-Related Distress: Results from the Prospective ColoCare Study
69	T	Lorona	Alcohol, Smoking, and Risk of Colorectal Cancer Recurrence and All-Cause Mortality: Results from the ColoCare Study
43		Mama	Multilevel Determinants of Physical Activity Adoption and Maintenance in Rural Breast Cancer Survivors
39		Manriquez Prado	Implementing an Adapted and Evidence Based Weight Loss Intervention for Latina Cancer Survivors during the COVID-19 Pandemic
10	T	McCarty	Pathways to Lung Cancer Diagnosis in Non-Screened Individuals
13	T	Miller	Should My Teen Get the Vaccine? A Comparison of HPV Vaccination Beliefs and Perceptions of Parents in the United States and Italy
60		Moore, A	Utilizing Community Health Ambassadors to Extend and Bridge the Gap in Healthcare System Services, Patient Navigation Services, and Resources through Community-Based Partnerships and Collaborations
58		Moore, J	Understanding Geographic and Racial Disparities in Mortality from Four Major Cancers in the State of Georgia: A Spatial Epidemiologic Analysis, 1999 - 2019
54	T	Morris	Sociodemographic and Clinical Factors Associated with Radiation Treatment Nonadherence Among Rural and Nonrural Cancer Patients
92	T	Mullins	Differences in Breast and Prostate Cancer Treatment by Cognitive Status in the US Health and Retirement Study
65		Myers	Perceptions of Multi-Cancer Early Detection in Primary Care: A Scoping Review
38		Nair	False-Positive Screening Mammography and Long-Term Adherence among Uninsured Women in a Community Outreach Program
50		Nduaguba	Racial/Ethnic Disparities in Cancer Outcomes among People with HIV in the United States: A Systematic Review
51	T	Omofuma	Racial/Ethnic Disparities in Esophageal and Gastric Cancer Mortality: Surveillance Epidemiology and End Results, 2000-2011
96		Ou	Financial Burden Is Associated with Decreased Healthcare Utilization and Medication Use among AYA Cancer Survivors During the COVID-19 Pandemic
22	T	Parlato	Association of Albumin and Colorectal Cancer Incidence in the Southern Community Cohort Study
61		Paskett	Awareness, Utilization, and Guideline-Adherence to Breast Cancer Risk Management Behavior Among a Community-Based Sample of High-Risk Women
5	T	Platter	Cancer Screening Information-Seeking in the Era of COVID-19
8	T	Prentice-Dunn	Increasing Access to HPV Vaccination for Active Duty Soldiers: Evaluating the Feasibility and Sustainability of a Nursing Education Intervention
24	T	Primm	Association of the Affordable Care Act's Medicaid Expansion on Stage at Diagnosis and Timely Treatment for Four Common Cancers
93		Sedani	Differences in Cannabis Use among Cancer Survivors in the U.S, 2019
16		Senft Everson	Understanding How Self-Endorsed Values Influence Support for Preventative Health Policies
91		Sharma	Association Between Quality of Life and Physical Functioning in a Gardening Intervention for Cancer Survivors
34		Shay	Disparities in HPV Vaccine Recommendation and On-Site Administration among a National Sample of Pediatric Oncologists
40	T	Shin	Informing the Implementation Pathway for Addressing HPV Vaccine Hesitancy and Uptake Across Diverse Communities in Los Angeles
33	T	Smith	Discrimination and Racial/Ethnic Identity May Influence a Patients' Beliefs About Their Cancer: Analysis of SKCC Catchment Area Surveys
36		Spring	Disparities in Telehealth for Oncology Encounters During COVID as a Function of Race, Ethnicity, and Insurance Type

14		Stump	Sociodemographic Predictors of Adolescents' Sun Protection Cognitions and Sunburns
75	T	Tapia	Effects of Metformin on Breast Density and Anthropometric Measures in a Phase II Clinical Trial in Premenopausal Women with Components of Metabolic Syndrome
17	T	Ulanday	Understanding Pre-Diagnosis and Overall Experiences of Young Women with Breast Cancer: A Machine Learning Approach Using Social Media Posts
25	T	Ver Hoeve	Barrier Resolution Following Community-Focused Patient Navigation
7		Weaver	Factors Contributing to Successful Implementation Science Research Partnerships with Community Clinics Conducting Cancer Control Research
59	T	Werts	Using Photovoice Methodology to Identify Health Behavior Change Intervention Preferences of Breast Cancer Survivors at the United States/Mexico Border
90		Yang	Allostatic Load and Risk of Mortality in Older Cancer Survivors: An Analysis of the National Health and Nutrition Examination Survey 1999-2010
88		Zhang, D	Accelerated Biological Aging Is Associated with a Higher Risk of All-Cause, Cancer-Specific, and Cardiovascular Disease-Specific Death in Older Cancer Survivors
23		Zhang, L	Association of Residential Economic and Racial Segregation with Mortality in the U.S.
35		Zhang, L	Disparities in Lung Cancer Screening Accessibility and Utilization in South Carolina
64	T	Zhang, X	Impact of the COVID-19 Pandemic on Cancer Screening Delays

POSTER ABSTRACTS

T denotes Trainee

Behavioral Health & Science Communication

1 T

A Qualitative Analysis of the Pathways to Ovarian Cancer Diagnosis

Lawson-Michod KA, Grieshober L, Watt MH, Green SE, Karabegovic L, Derzon S, Owens M, McCarty RD, Doherty JA, Barnard ME

Purpose of the study: Ovarian cancer is often diagnosed at a late stage when survival is poor. Qualitative narratives of patients' pathways to ovarian cancer diagnoses may identify opportunities for earlier cancer interception and, consequently, earlier stage at diagnosis.

Methods: We included ovarian cancer patients and survivors diagnosed or treated at the University of Utah (UHEALTH) between 2/5/2018 and 8/6/2020. Trained study staff conducted telephone-based in-depth interviews with 14 study participants from 10/18/2019 to 10/10/2021, focusing on the pathway to diagnosis. Thematic analysis was conducted in Dedoose using a two-phase approach of deductive and inductive coding. Deductive coding was completed by two independent reviewers using a priori codes from the validated Model of Pathways to Treatment (MPT), including self-appraisal and management of symptoms, medical help-seeking, diagnosis, and initiation of treatment. Inductive coding identified emerging themes within each stage of the MPT.

Results: The median age at ovarian cancer diagnosis was 61.5 years (range, 29-78 years), and the majority of women (10/14) were diagnosed with advanced stage disease. The median time from first symptoms to diagnosis was 4 months (range, 20 days to 4.5 years). Emerging themes unique to MPT intervals included: symptom normalization and self-management (appraisal), patient-provider relationship and logistics (medical help-seeking), and continuity of care and social connections (diagnosis). Themes common to the help-seeking and pre-treatment intervals included financial concerns and social support, though financial barriers during the help-seeking interval were described only by patients who presented at the emergency department (ED) and referred from the ED to gynecologic oncology. Among patients who presented to an outpatient provider and were referred directly to gynecologic oncology, positive patient-provider relationships and continuity of care acted as facilitators, shortening the diagnostic interval.

Conclusion: Findings suggest that some, but not all, patients experience a prolonged pathway to diagnosis. Areas for interception may include patient education on ovarian cancer symptoms and addressing systemic barriers to healthcare access.

2 T

All Those in Favor Say Yay: Predicting Support for Public Health Policies

Glasgow TE, Miller CA, Freudenberger D, McGuire KP, Fuemmeler BF

Purpose of the study: Given that health policies are a cancer preventive strategy, the main purpose of this study was to examine which factors, such as sociodemographic variables and cancer beliefs, are associated with support of health policies.

Methods: The data were obtained from the Health Information National Trends Survey Cycle IV. Participants (N=3865) provided their support for nine policy questions using a 5-point scale: Strongly oppose to Strongly support. Five questions were tobacco-related (e.g., Tobacco products should not be advertised on social media), three alcohol-related (e.g., Requiring specific health warnings on alcohol containers?), and one nutrition-related (i.e., Junk food products, including candy, chips, soda, and flavored sports drinks, should not be advertised to children on social media). Composite scores were created for the alcohol and tobacco policy questions due to good reliability. Three linear regression models using survey weights were conducted in R, with the two composite scores and nutrition question as the outcome variables.

Results: Being 55 or older was associated with stronger support of tobacco policies. Female respondents and those willing to change behavior if a genetic test suggested a high risk of cancer were supportive of all three types of health policies. Those with children and worried about getting cancer were supportive of tobacco and alcohol policies. Hispanic and other-race respondents were more supportive of alcohol policies. Black and other-race respondents were less supportive of the nutrition policy. Those who were between 35-54 years old were less supportive of alcohol policies. Binge drinkers were less supportive of tobacco and alcohol policies. Those who were politically conservative were less supportive of tobacco and nutrition policies. Those who were politically moderate were less supportive of tobacco policies. Current smokers were less supportive of tobacco policies. Those who believed there is not much to do to prevent cancer were less supportive of all three types of policies.

Conclusions: There were several variables associated with support (or opposition) of cancer preventive health policies. Future research to better understand why some individuals oppose health policies should be done.

Analysis of Emoji Use in SMS-Based Lifestyle Interventions Applied to the ¡Mi Vida Saludable! (MiVS) Study

Crane TE, Lind K, Marin-Chollom A, Santiago-Torres M, Thomson CA, Content I, Koch P, Greenlee H

Purpose: To evaluate participant use of emojis in the ¡Mi Vida Saludable! (My Healthy Life) study to improve diet and physical activity in Spanish- and English-speaking Latina breast cancer survivors.

Methods: Participants randomly assigned to the 11-month eHealth communication (text messaging, emails, Cook for Your Life website) intervention were included in this analysis (n=83). Participants received 200 outgoing SMS messages based on behavioral theory to promote diet and physical activity behavior change. Incoming SMS data from participants were extracted and content was coded. Identified emojis were matched to the relevant emoji text string (e.g., \U0001f600) and type (e.g., smiley face) and coded for attributes (positive, negative, neutral). Outgoing SMS messages classified according to topic and behavioral construct were merged with incoming participant responses by timestamp to identify which outgoing messages received responses. Proportions of message topic and construct responses were calculated for each participant. Descriptive statistics were calculated for all variables of interest. Differences in demographic and clinical characteristics according to emoji use were tested using two-sided independent sample t-tests and chi-square tests.

Results: SMS data were obtained for 83 participants. Over the 11-month intervention period, the number of responses sent by each participant ranged from 0 to 103 and 31.3% of women were spontaneous emoji users. Positive affect emojis were the most commonly sent. Emoji users were more likely to speak mostly Spanish (p=0.04). Emoji users engaged the most with SMS message related to behavioral capability, facilitating, motivational, self-efficacy and goal setting content. No differences in diet and physical activity behavioral outcomes were observed between emoji users and non-users.

Conclusion: Text-based SMS messaging is a mainstay in today's society and if effective, is a relatively low-cost intervention for improving health behaviors. In the ¡Mi Vida Saludable! nearly one third of Latina breast cancer survivors spontaneously engaged in messaging using emojis. Future studies should consider the use of emojis for outgoing messages and plan for the use of emojis in incoming messages from participants.

4 T

Associations Between Inflammation and Angiogenesis Biomarkers and Cancer-Related Distress: Results from the Prospective ColoCare Study

Lindley CL, Gigic B, Han C, Lin T, Peoples AR, Himbert C, Warby CA, Hardikar S, Ashworth A, Schrotz-King P, Siegel EM, Toriola AT, Ulrich CM, Sryjala KL, Ose J

BACKGROUND Patients with colorectal cancer (CRC) commonly suffer from complex psychological distress. Previous research,

including preclinical models, suggests this may be linked to systemic inflammation and angiogenesis. We investigated the effects of inflammation and angiogenesis biomarkers on cancer-related distress 12 months after surgery in CRC patients.

METHODS We included n=315 CRC patients (stage I-IV) from 2 study sites of the prospective, longitudinal ColoCare Study: Huntsman Cancer Institute and University of Heidelberg. Inflammatory biomarkers: CRP, IL-6, IL-8, SAA and TNF- α , and angiogenesis biomarkers: VEGF-A VEGF-D, sICAM-1 and sVCAM-1 were measured in pre-surgery serum samples. Distress was measured using the Cancer and Treatment Distress instrument including an overall score and 4 subdomains: uncertainty, health burden, family and friends strain, and managing medical and financial demands. Distress scores were dichotomized using a previously established cut point. Logistic regressions were computed to investigate the associations of log2- transformed biomarkers with distress 12 months after surgery. Results were adjusted for age, sex, body mass index, tumor stage and study site.

RESULTS Doubling of IL-8 and VEGF-D was associated with increased risk of overall distress (e.g., VEGF-D: Odds Ratio (OR)=1.24; 95% Confidence Interval (CI)=1.00-1.53; p=0.048). Doubling of VEGF-A and VEGF-D was associated with increased risk of high family and friends strain distress (e.g., VEGF-A: OR=1.34; 95% CI=1.07-1.68; p=0.02). Furthermore, doubling of TNF- α , IL-8 and VEGF-A was associated with increased risk of high health burden (e.g., TNF- α : OR=2.04; 95% CI=1.03-1.60; p=0.03). Finally, doubling of IL-6, VEGF-A and VEGF-D was associated with increased risk of medical and financial demands (e.g., IL-6: OR=1.32; 95% CI=1.02-1.72; p=0.04).

CONCLUSIONS This is the first study to show that angiogenesis biomarkers are significantly associated with cancer-related distress and adds to the evidence that inflammation biomarkers are associated with cancer-related distress one year after surgery. Interventions focused on lowering systemic inflammation, such as exercise and diet, may impact longer term cancer-related distress and improve the quality of life of CRC patient.

5 T

Cancer Screening Information-Seeking in the Era of COVID-19

Platter, HN, Ezeani, AY, Hyams TC, Huang GC, Klein WMP, Vanderpool, R

PURPOSE: It is unclear how cancer screening information-seeking may have changed throughout the COVID-19 pandemic given the disruption to routine screening and documented delays in the diagnosis and treatment of screening-eligible cancers. The aim of this study was to examine cancer screening information-seeking before and after the COVID-19 pandemic using data from the National Cancer Institute's Cancer Information Service (CIS), a well-known and trusted multichannel source of cancer information.

METHODS: We analyzed cancer screening inquiries from members of the general public before (March 2019 - March 2020) and after (March 2020 - March 2021) the CIS received a general public inquiry on COVID-19. We also examined the CIS Point of Access (email, LiveHelp, social media, telephone), Discussion Topics, and Referrals given by CIS staff associated with these inquiries. We

conducted chi-squared tests to compare cancer screening inquiry counts across the two time periods.

RESULTS: Among general public users, there were 1,906 cancer screening inquiries to the CIS between the pre-COVID (n=837, 43.9%) and COVID periods (n=1069, 56.1%). Cancer site inquiries across the two periods included breast (n=953), cervical (n=179), colorectal (n=183), general (n=327), lung (n=51), and 28 other cancers combined (n=213). The proportion of breast cancer screening inquiries increased after COVID ($p<.001$), whereas cervical, colorectal, and other cancer inquiries decreased ($p<.001$). After COVID, more inquiries were made by telephone ($p<.001$), while other access points decreased; screening inquiries related to finding health care services, managing costs, and general cancer questions increased, but those related to tests and other topics decreased ($p<.001$); and Referrals decreased except for those to national and community organizations or to the CDC National Breast and Cervical Cancer Early Detection Program ($p<.001$).

CONCLUSION: We found the COVID-19 pandemic period was associated with differences in cancer information-seeking among the general public using the CIS by Point of Access, Cancer Site, Discussion Topics, and Referrals by CIS staff. Future work should evaluate how these changes in information-seeking may influence intentions to screen for cancer post-pandemic.

6

COVID-19 Vaccination Intent, HPV Vaccination Receipt, and Dimensions of Vaccine Hesitancy

Christini K, Chai A, Chang E, Kirchoff AC, Waters A, Mann S, Harris K, Hashibe M, Moraitis AM, Kepka D

Objective: To examine similarities and differences of intention to receive the COVID-19 vaccine and receipt of the HPV vaccine for cancer prevention. Also, to assess dimensions of vaccine hesitancy prior to, and following, the release of the COVID-19 vaccine.

Methods: An online cross-sectional survey of vaccination attitudes and knowledge of young adults 18-26 years old (n = 2397) in 12 Mountain West states in the U.S. was conducted in October 2020 - April 2021. Directed acyclic graphs (DAGs) identified scientifically meaningful covariates. Adjusted odds ratios (aORs) with 95% confidence intervals (CIs) were estimated using penalized multivariate logistic regression, adjusting for potential confounders. A final model was chosen and effect measure modification (EMM) was examined. Dimensions of vaccine hesitancy included attitudes regarding vaccine effectiveness, safety, and trust in physicians and health authorities were compared for Oct. - Dec. 2020 and Jan. 2021 - April. 2021 using Pearson chi-square.

Results: Those who received any dose of the HPV vaccine had 1.6 times the adjusted odds (95% CI, 1.3-1.9) of intent to obtain the COVID-19 vaccine compared with those who had not received any dose of the HPV vaccine. Being male (aOR = 1.4 [95% CI, 1.1-1.6]) and taking the survey Oct. - Dec. 2020 versus Jan. 2021 - April. 2021 (aOR=2.2 [95% CI, 1.8-2.6]) were associated with intent to obtain a COVID-19 vaccination. We did not find EMM in the HPV vaccination and COVID-19 vaccination intention relationship ($P > 0.34$). Disagreeing or being unsure of the effectiveness (24.5% v 75.5%, $P<.001$), protection conferred (15.4% v 84.6%, $P<.0001$),

and safety (23.0% v 77.0%, $P<.0001$) of vaccines all increased after Dec. 2020, while distrust of physicians (21.9% v 78.1%, $P<.0001$) and health authorities (26.3% v 73.7%, $P<.0001$) grew.

Conclusions: Results indicate that the decision-making process for intending to get a COVID-19 immunization and an HPV immunization are similar and that dimensions of vaccine hesitancy, including trust, are dynamic, suggesting that interventions to address vaccine hesitancy may improve both HPV and COVID-19 vaccine hesitancy. Observed increases in vaccine complacency and decreases in trust of providers may result in increased infection burden.

7

Factors Contributing to Successful Implementation Science Research Partnerships with Community Clinics Conducting Cancer Control Research

Weaver KE, Foley K, Easterling D

Purpose: To understand the motivations, experiences, satisfaction, and challenges of clinical practices that collaborate on cancer control implementation science (IS) research in order to guide researchers in forming stronger partnerships.

Methods: We conducted semi-structured interviews with 14 stakeholders at oncology and primary care practices that participated in two pragmatic IS trials on smoking cessation and cancer screening. Interviews covered: positive and negative experiences participating in IS research, interest in future IS studies, and interest in IS capacity building activities. Interviews were audiotaped and transcribed; results were summarized using a thematic analysis approach.

Results: We interviewed 14 stakeholders (3 physicians, 1 nurse practitioner, 1 clinical nurse, 5 clinic or program managers/administrators, 4 research managers/administrators; 2 males, 12 females; 13 white, non-Hispanic). Reported clinic primary motivations for participating in the IS trial included: gaining access to study interventions (n=11) and improving care delivery (n=8). Only two reported that being involved in research was a primary motivation, while three pointed to meeting the expectations of belonging to a research network. Retrospectively, most stakeholders identified improvements in clinical care as the most important benefit they received from participating in research (n=10). Benefits related to research relationships or knowledge were identified as most important by 4 stakeholders. With regards to positive support provided by the research team, themes included communication, tailoring and adaptation of the intervention to fit the local context, and study investigators visiting the participating site. Study topics of greatest interest to stakeholders included: interventions to improve cancer care, technology-based interventions, quality improvement methods, and health equity.

Conclusions: Clinic-based research partners value cancer control research with a direct impact on patients and improved care delivery and that honors flexibility for adaptation, given local context. IS researchers can strengthen partnerships with clinics through in-person engagement and frequent two-way communication with clinic staff.

Funding support: P50CA244693; 2P30CA012197.

8 T

Increasing Access to HPV Vaccination for Active Duty Soldiers: Evaluating the Feasibility and Sustainability of a Nursing Education Intervention

Grabert BK, Penick E, Stockton E, Prentice-Dunn H, Ward M, Kirk T, Gilkey MB

Purpose. Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the military and accounts for more healthcare visits than other STIs. Although vaccination against HPV is safe and effective, it is not required for U.S. military service, and HPV vaccination coverage is extremely low among active duty soldiers. To improve coverage, we sought to evaluate the feasibility and sustainability of using a nursing education intervention to integrate HPV vaccination into medical processing procedures for soldiers at a large military base.

Methods. In March 2021, we conducted a 1-hour training about HPV vaccination for nursing staff (n=11) at the Medical One Stop, a medical clinic that supports the intake of soldiers at Fort Bragg, North Carolina. Training included using presumptive recommendations to present HPV vaccine as the default choice in routine care and guidance on addressing soldiers' concerns. After the training, nursing staff integrated HPV vaccination into clinic procedures for soldiers, ages 18-26. We conducted online surveys of nursing staff to assess their perspectives on intervention feasibility. Nursing staff also tracked HPV vaccine uptake among soldiers for 4 weeks after the training to assess adoption and then for 2 weeks at a 4-month follow-up to assess sustainability.

Results. Nursing staff strongly agreed that the presumptive recommendation approach fit in with medical processing procedures (mean=4.6 of 5.0). Of 516 soldiers offered HPV vaccine in the 4 weeks following the training, 198 (38%) accepted and received the vaccine. Younger soldiers, ages 18-20, more often accepted HPV vaccination than older soldiers, ages 21-26 (46% versus 32%, $p<0.01$). Vaccine uptake was similar at 4-month follow-up, with 98 of 230 eligible soldiers (43%) receiving HPV vaccine.

Conclusions. Our findings suggest our light-touch intervention to train nursing staff to recommend and administer HPV vaccines to soldiers is feasible and sustainable, and warrants wider-scale testing as a strategy to protect soldiers from HPV-attributable cancers. Even in the absence of policies requiring HPV vaccination for military service, improving HPV vaccine access via a nursing education intervention may be one path to increasing coverage among soldiers.

9

Just In Time Health Communication: Using the Electronic Medical Records (EMR) to Deliver Tailored Patient Education

Fleisher L, Koren D, Kenny C

Purpose: To pilot test the MyCareCompass (MCC) digital patient engagement system that deploys personalized and health literacy-friendly videos, emails and text messaging to educate patients

and caregivers about how to prepare for their procedures and treatment at the exact time they need it utilizing EMR scheduling software and select patient data points.

Methods: A Steering Committee (population science, clinical, IT, social work, and patient education) was established to guide the development and focus of the pilot to evaluate the acceptability and feasibility of integrating MCC with the EMR. Patients scheduled for a port-insertion automatically received personalized texts/emails from MCC. They received a text/email immediately upon scheduling introducing them to MCC, the day before their procedure to prepare them for their upcoming port-insertion, and after their procedure to discuss aftercare. Additional information (general support, nutrition, and financial) was sent following the port-insertion materials across a one-month period. Surveys were embedded into MCC and sent directly to patients, and a short follow-up interview was conducted with patients who opt-in through a REDCap survey.

Results: Between February-November, 2021, 609 patients were enrolled in MCC and received educational emails, texts and videos related to their port insertion procedure triggered automatically via integration between EMR data points and MCC technology. 106 patients completed the voluntary survey sent 3 days after the last port insertion video. Patients rated the MCC as helpful in easing anxiety (92%), understanding why the port was needed (92%), preparing (93%) and caring for the port (91%). Follow-up telephone interviews were conducted with 12 patients who provided consent. Consistent with the survey findings, patients valued receiving the information in real time and reported it improved their preparation for the procedure. Although most indicated it reduced their anxiety, a few reported it increased their anxiety.

Conclusions: With the multi-disciplinary stakeholder involvement in designing and launching the pilot, we were able to set-up the data exchange with a flawless, automated implementation. Patient feedback was extremely positive in regard to prep

10 T

Pathways to Lung Cancer Diagnosis in Non-Screened Individuals

McCarty RD, Grieshaber L, Lawson-Michod K, Barnard ME, Owens M, Green S, Karabegovic L, Derzon S, Akerley WL, Watt MH, Doherty JA

Purpose: Early detection of lung cancer is associated with better prognosis, but screening is recommended only for those at highest risk, and uptake among that population is low. We sought to characterize pathways to lung cancer diagnosis among unscreened individuals.

Methods: Participants were English-speaking individuals with lung cancer who received care at the University of Utah (n=14). We preferentially invited never-smokers and individuals ineligible for asymptomatic screening. Semi-structured interviews explored participants' narratives of their cancer diagnoses. Interviews were audio-recorded, transcribed, and coded in Dedoose in two stages. First, we conducted deductive coding using the first three intervals of the Models of Pathways to Treatment (MPT) framework:

appraisal, help-seeking, and diagnostic. Second, we conducted inductive coding to identify themes within each interval, including factors that facilitated or delayed diagnosis. Coding was completed by two independent reviewers who discussed for consensus.

Results: The majority of participants were ever smokers (n=8), female (n=9), and non-Hispanic White (n=13). Median age at diagnosis was 66 years (range 44-81), and median time between diagnosis and interview was 2.5 years (range 1-10). No one had undergone screening; 12 participants were ineligible as never-smokers (n=6) or former-smokers with <30 pack years (n=6). Barriers to diagnosis identified in the MPT intervals included: self-dismissal of symptoms, most commonly persistent cough (appraisal), difficulty accessing providers (help-seeking), and dismissal or misattribution of symptoms by providers (diagnostic). Factors that facilitated diagnosis included: proactive acknowledgment of symptoms by individuals or their support networks (appraisal), self-advocating for testing (diagnosis), and referral to imaging at presentation of symptoms (diagnosis).

Conclusions: Most opportunities to reduce time to diagnosis occurred during the appraisal and diagnostic intervals. Educating patients, especially those ineligible for screening, to follow-up with healthcare providers on persistent coughs and to self-advocate for imaging may lead to earlier lung cancer diagnoses.

11 T

Predictors of COVID-19 Vaccine Acceptance Among Cancer Patients

Hathaway CA, Siegel EM, Peoples AR, Ulrich CM, Penedo FJ, Tworoger SS, Islam JY

We evaluated beliefs and sociodemographic factors that influence COVID-19 vaccine acceptance in those with a confirmed diagnosis of invasive cancer. We sent an electronic survey from June 2020-February 2021 to Moffitt Cancer Center patients who were 18-89 years old; 5,721 patients reported on demographic factors, perceived COVID-19 severity, recent flu shot status, and COVID-19 vaccine confidence/concerns. A COVID-19 risk mitigation score was calculated by summing the frequency of five behaviors (e.g., mask wearing). Age and zip code to assess Area Deprivation Index (ADI) were extracted from medical records. The outcome was COVID-19 vaccine acceptance ("Now that a COVID-19 vaccine is available, are you likely to get it?") categorized as high (already received it, would get it when available) and low accepters (waiting for a doctor to recommend it, waiting until more people receive it, not likely to get). We conducted Chi-square tests to assess differences of vaccine acceptance with vaccine confidence and concerns and multivariable logistic regression to evaluate odds of vaccine acceptance by sociodemographic factors. Most patients (86.7%) were high accepters. High vs. low accepters had more confidence that the vaccine was effective and safe ($p<0.001$) and were less likely to have concerns about vaccine effectiveness, side effects and interactions with medications ($p<0.001$). Older individuals (70-89 vs. 18-49 OR=2.53, 95%CI=1.31-4.86), high perceived COVID-19 severity (vs. low OR=2.71, 95%CI=1.87-3.92), high risk mitigation behavioral score (OR=1.75, 95%CI=1.57-1.94) and receiving the flu shot (vs. not received OR=6.44, 95%CI=5.16-8.03) were associated with a higher odds of vaccine acceptance. Individuals living with >1 other person (vs. alone OR=0.52,

95%CI=0.35-0.77) and higher ADI (living in an area with greater deprivation) (OR=0.89, 95%CI=0.85-0.93) had lower odds of vaccine acceptance. Other demographic factors were not associated with acceptance. Our study shows that most cancer patients had high COVID-19 vaccine acceptance and those with low acceptance reported multiple concerns about the vaccine. Interventions for vaccine uptake in cancer patients should focus on those not previously receiving a flu shot, younger age and higher ADI.

12

Predictors of Genetic Risk Recall in a Randomized Melanoma Precision Prevention Trial

Lacson JCA, Kim Y, Roetzheim R, Sutton SK, Vadaparampil ST, Kanetsky PA

PURPOSE: An underlying premise of genetics-based precision prevention efforts is that individuals understand and retain their genetic risk to motivate long-term preventive behavior. Here, we aimed to identify predictors of genetic risk recall among participants enrolled in a melanoma precision prevention trial.

METHODS: Participants were provided information on their MC1R genetic risk (average or higher risk) as part of the intervention and asked to recall their risk category 6- and 12-months post-intervention. Predictors of recall were determined by stepwise logistic (average risk) or multinomial (higher risk) regression. Potential predictors included participant characteristics, psychosocial variables (e.g., perceived risk, perceived severity), and measures related to the prevention materials (e.g., amount read, believability).

RESULTS: Among participants at average risk (n=188), 78% correctly recalled their risk, 21% didn't recall, and 1 person misremembered. Being never married, history of non-melanoma skin cancer, perceiving oneself to be unlikely to develop melanoma, amount of prevention materials read, perceived clarity of materials, and completion of the telephone follow-up were inversely associated with not recalling genetic risk. Among participants at higher risk (n=259), 50% correctly recalled, 31% didn't recall, and 19% misremembered. Amount of prevention materials read and perceived absolute chance of melanoma were inversely associated with both not recalling or misremembering genetic risk. In contrast, education was inversely associated with not recalling genetic risk but was positively associated with misremembering. Higher-risk participants were 3.61 times as likely to misremember or not recall than average risk participants (95% CI: 2.38-5.56).

CONCLUSIONS: Lower perceived risk and lower participant engagement with the study were associated with increased risk of not recalling or misremembering. Participants at higher risk were more likely to not recall or misremember than those at average risk, suggesting self-enhancement bias or defensive mechanisms against threatening health information. Future research should explore different strategies to maximize genetic risk recall, which could enhance outcomes of precision prevention efforts.

13 T

Should My Teen Get the Vaccine? A Comparison of HPV Vaccination Beliefs and Perceptions of Parents in the United States and Italy

Miller CA, Guidry JPD, Lovari A, Fuemmeler BF

Background. Despite widespread availability of the HPV vaccine in countries ranked among the highest in cancer mortality prevention, such as the United States (US) and Italy (ITL), vaccination coverage remains suboptimal. The purpose of this research was to gain a better understanding of the US and Italian contexts to inform future interventions.

Methods. Participants (N=500) were recruited through a commercial survey administration and sampling company, Qualtrics, in September 2019. Quota sampling was utilized to ensure the sample would consist of equal samples American and Italian parents. To eligible for participation, the parents must report having a child between the ages of 5 to 10 living in their home. Survey items collected socio-demographic characteristics and knowledge, attitudes, and intentions related to HPV and the HPV Vaccine.

Results. Respondents (n=250 US and n=250 Italian) were 37.7 years (SD=6.3) on average, mostly female (61.8-70.6%), and married or living together (80.5- 93.9%). These parents were predominately White/Caucasian (80.5-97.7%) and about one-half had college degrees (40.5-42.7%). In univariate analyses, Italian parents (compared to US parents) had significantly lower HPV awareness, lower HPV knowledge, and lower supportive attitudes about the HPV vaccine (all $p<.001$). In adjusted models, Italian parents ($p=.01$), minorities ($p<.001$), and those with less awareness of HPV/HPV vaccine ($p=.01$) and less supportive attitudes towards HPV vaccination ($p<.001$) were less likely to report intentions to have their children vaccinated.

Conclusions. Although the majority of parents in this study had heard of the HPV vaccine, low overall HPV vaccine coverage disparities in coverage remain in these countries. Clinicians should recommend HPV vaccination in the same way as other adolescent vaccines. Over time HPV vaccine discussions in the US shifted in focus from youth sexual behaviors to cancer prevention. This change in emphasis may be helpful in the Italian context. In addition, future public health campaigns should aim to increase awareness and improve knowledge and attitudes related to HPV infection prevention.

14

Sociodemographic Predictors of Adolescents' Sun Protection Cognitions and Sunburns

Stump TK, Siniscalchi N, Brunsgaard EK, Grossman D, Jensen J, Buller DB, Hay JL, Tercyak KP, Wu YP

Purpose: In advance of a school-based skin cancer prevention intervention for adolescents, we assessed students' demographic characteristics and cognitive factors that are associated with sun protection and exposure.

Methods: Within 10 Utah high schools that completed a baseline visit in Fall 2021, 463 students (47.2% male; 21.9% non-White;

38.4% from rural schools; Mage=15.16) completed a baseline assessment, which included questions on sun protection and exposure, self-efficacy for sun protection behaviors, response efficacy for sun protection, perceived risk of melanoma, and perceived severity of melanoma (rated from 1=strongly disagree to 5=strongly agree). Descriptive statistics and t-tests were used to assess differences in these variables based on demographic factors (gender, race, rural vs. urban school).

Results: Self-efficacy for performing sun protection behaviors was moderate ($M_s=2.84-3.69$), as was perceived risk ($M=3.31$). Response efficacy for sun protection ($M=3.86$) and perceived severity of melanoma ($M=3.95$) had relatively greater endorsement. Compared to females, males found it easier to use sunscreen ($M=3.53$ vs. 3.36 , $p=.047$) and protective clothing ($M=3.87$ vs. 3.53 , $p<.001$). Compared to non-White students, White students found it easier to avoid the sun during peak UV hours ($M=3.78$ vs. 3.11 , $p=.007$), reported greater perceived risk of melanoma ($M=3.42$ vs. 2.90 , $p<.001$), and reported greater perceived severity of melanoma ($M=4.00$ vs. 3.79 , $p=.009$). White participants also reported more sunburns in the past year ($M=2.08$ vs. $.77$, $p<.007$). Compared to students in rural schools, those in urban schools found it easier to use sunscreen ($M=3.61$ vs. 3.19 , $p<.001$), wear protective clothing ($M=3.77$ vs. 3.56 , $p=.017$), and avoid the sun during peak UV hours ($M=2.94$ vs. 2.67 , $p=.020$). Students in urban schools also reported greater response efficacy for sun protection ($M=3.94$ vs. 3.73 , $p=.002$), greater perceived severity of melanoma ($M=4.02$ vs. 3.83 , $p=.006$), and fewer sunburns ($M=1.61$ vs. 2.06 , $p<.001$).

Conclusions: Adolescent students might benefit from interventions that enhance self-efficacy for sun protection and perceived risk of melanoma. Education on sun protection and melanoma risk is especially needed in rural schools.

15 T

Understanding Attitudes toward Physical Activity for Cancer Survivors with Neuropathic Pain through Stakeholder Engagement

Leitzelar BN, Almassi NE, Koltyn KF

Purpose: Physical activity (PA) may be a viable point of intervention for the management of cancer-related neuropathic pain; however, little is known about the attitudes surrounding PA participation in this population. This study shed light on such attitudes through engaging key stakeholders in the design of a PA program.

Methods: Participants from three key stakeholder groups (i.e., cancer survivors with neuropathic pain, healthcare providers, community cancer support organizations) were recruited to participate in two focus group interviews. Due to the COVID-19 pandemic, focus groups were changed to individual semi-structured phone interviews. Interviews centered on: (interview A) identifying attitudes toward participating in PA (survivors with neuropathic pain), recommending PA (healthcare providers), and implementing PA programs (community organizations) for cancer survivors with neuropathic pain; and (interview B) soliciting perspectives on the design of a PA program for cancer survivors with neuropathic pain. Data were transcribed verbatim and analyzed using thematic analysis.

Results: Interview A: Thirteen individuals (cancer survivors n=5, healthcare providers n=6, community organizations n=2) completed interview A. Themes included: positive attitudes towards PA, neuropathy-specific barriers to PA (e.g., balance, numbness, weakness), and potential harms of PA (e.g., fall risk, symptom exacerbation, psychosocial). Further, all participants indicated a need for individualized PA programs. Cancer survivors defined “success” in a PA program to include behavioral adoption and improved function and endurance. Interview B: Six individuals returned for interview B (cancer survivor n=1, healthcare providers n=3, community organizations n=2). Participants indicated the program content was acceptable and would be of interest to cancer survivors with neuropathic pain. Suggestions for improvement involved implementation of safety measures (i.e., require a physical exam) and including additional neuropathy-specific information.

Conclusions: PA programs that focus on behavioral adoption and allow individuals to incorporate personal motivations, interests, skills, and needs into the intervention may be of interest for cancer survivors with neuropathic pain.

16

Understanding How Self-Endorsed Values Influence Support for Preventative Health Policies

Senft Everson N, Heley K, D’Angelo H, Oh A, Vanderpool R

Purpose: To examine how individual values relate to support for preventive health policies for tobacco, alcohol, and nutrition, which may inform value-tailored messaging to increase policy support.

Methods: NCI’s 2020 Health Information National Trends Survey (cycle 4) provided data for this study. One item assessed which of seven values was most important in respondents’ day-to-day life (e.g., being happy, helping people). Support for each of 9 potential preventive health policies for junk food, alcohol, and tobacco products (e.g., requiring health warnings on alcohol containers, not advertising tobacco products on social media), was dichotomized as supportive (strongly support, support) or not supportive (strongly oppose, oppose, neither support nor oppose). Analyses described the percentage of supportive respondents for each policy in each value category. General support was computed as the mean percent of supportive responses across all nine policies in each value category.

Results: Among 3,676 respondents, general support across all policies was lowest (51%) among the 14% of respondents who most valued making their own decisions, and this was consistent across individual policies. General support was 55% among the 21% who most valued being happy, though this group was relatively more supportive of policies related to social media advertising. General support was highest among those who valued connection to religion (8%) and good health (13%), at 64% and 62%, respectively, and this pattern of high support was consistent across alcohol and tobacco-related policies, but not junk food. General support across preventive health policies was 58% among the 30% who most valued assuring one’s family is safe and secure. Surprisingly, this group was no more likely to support policies focused on protecting children. Helping people (7%) and loyalty to family and friends (6%) were endorsed less frequently, and support for limiting social media advertisements of junk food products to children was highest in these groups.

Conclusions: Reported values are related to support for preventive health policies in general and in specific health policy domains. Further examination of these patterns may inform communication and dissemination of evidence for preventive policies.

17 T

Understanding Pre-Diagnosis and Overall Experiences of Young Women with Breast Cancer: A Machine Learning Approach Using Social Media Posts

Ulanday KT, Topaz M, Lewis S, Walker D, Terry MB, Houghton LC

Background: Breast cancer is increasing in women under 55 years, and is increasing at a faster rate in women under 40 years. As guidelines for population-based breast cancer screening start after 40 years old, we aimed to identify how young women under 40 years first detect their breast cancer and how they navigate the health system.

Methods: This study used natural language processing and machine learning to detect deductive themes related to pre-diagnosis and overall healthcare experiences of young women with early onset breast cancer, who were members of the online forum “Young Survival Coalition,” - an international organization serving young women who are diagnosed with breast cancer. In the training dataset, we reviewed text from 750 posts of the forum’s 571,602 posts published between March 2009 and December 2019. Then, using qualitative content analysis, posts were coded for the presence of “first signs and symptoms,” “steps to diagnosis,” “health-care interactions,” “patient-provider feelings,” and “staging type.” Next, using an open-source analytics platform, KNIME, we implemented three algorithms (i.e., support vector machine (SVM), random forest (RF), and decision tree (DT)) to build classification models. For each model, we calculated accuracy statistics (summarized as the F-measure-harmonic mean of the positive predictive value and sensitivity of the classification model). Finally, for each of the three classification models, we calculated the average across the five codes. The model with the best F-measure was identified.

Results: About 16% of posts were coded for the presence of “first signs and symptoms,” 25% for “steps to diagnosis,” 39% for “health-care interactions,” 17% for “patient-provider feelings,” and 48% for “staging type” in the training dataset. The average F-measure across codes were 79%, 77%, and 72%, for the SVM, DT, and RF models, respectively.

Conclusions: The SVM classification model best fit the training dataset. Next steps include application of the classification model to the larger dataset and further evaluating each code. Examining the pre-diagnosis experiences of early onset breast cancer patients may offer initial data to guide further research and inform clinical practice including the screening of young women.

18

Poster Withdrawn

19 T

Using Social Marketing Theory to Inform a HPV Vaccine Campaign with Arab and Mexican American Communities in Brooklyn

Chebli P, Sifuentes S, Foster V, Yusuf Y, Kazmi A, Idris S, Trinh-Shevrin C, Kwon SC

Purpose. To partner with Arab and Mexican American communities in Brooklyn to address a significant gap for a multilevel, community-centered and culturally-tailored HPV campaign.

Methods. Guided by community-based participatory research and social marketing theory, we conducted semi-structured interviews with community stakeholders and members (parents/caregivers and adolescents) from the Arab and Mexican American communities in Brooklyn to examine challenges/facilitators to HPV vaccination to inform a HPV campaign. We used a blended content analysis and organized themes by 4 P's of the social marketing mix (Price, Product, Place, Promotion).

Results. We completed interviews with 14 community stakeholders, 14 parents, and 16 adolescents. Whereas most adolescents preferred education in English, stakeholders and parents identified a significant lack of in-language HPV materials in both communities. Most parents reported limited knowledge of HPV, including the vaccination status of their adolescents. The two communities shared restrictive norms about premarital sex, particularly for girls, and the perception that the HPV vaccine is for girls (Price). Stakeholders and parents agreed that the HPV campaign should emphasize cancer prevention not sexually transmitted illness. Arab parents favored messaging that emphasizes risk reduction for their daughters after they get married and become sexually active (Product). Most participants cited doctors as ideal messengers and recommended parent educational workshops be delivered either online (e.g., Facebook) or through in-person interactive workshops conducted in community-based organizations (CBOs), and for adolescents either on social media (e.g., TikTok) or schools (Place). Stakeholders and parents agreed that bilingual brochures should be available in various community sites, including doctors' offices and CBOs. Adolescents cited social media as the ideal dissemination channel (Promotion).

Conclusion. Our participatory social marketing approach underscores the need for a community-centered, multilevel in-language HPV campaign for Arab and Mexican communities that aligns with their cultural norms and leverages existing community assets such as CBOs, healthcare providers, and schools.

20 T

Worksite Weight Loss Program for Cancer Prevention among School District Employees with Overweight and Obesity

Lee CY, Robertson MC, Le T, Raber M, Rechis R, Oestman K, Neff A, Macneish A, Johnston H, Basen-Engquist KM

Purpose of the study: Attaining a healthy weight is associated with a lower risk of cancer and other chronic diseases. The current study examined the effects of a worksite weight loss program on changes in weight, physical activity, and diet among school district employees with overweight and obesity.

Methods: A three arm, 6-month digital weight loss intervention (Vibrant Lives, VL) was implemented among employees of a public school district in southeast Texas (2017-2019). The VL Basic arm (VLB) received the program materials adapted from the Diabetes Prevention Program and related text messages; the VL Plus arm (VLP) additionally received activity monitors and Wi-Fi connected scales and participated in activities using these devices. A subset of the VL Plus arm (VL Plus with Support, VLS) received additional coaching support. Program satisfaction and changes in weight, physical activity, and dietary intake (red meat, fruit, vegetable, fast food, breakfast, and sugar-sweetened beverage consumption) were compared across arms using Chi-square and repeated measure mixed model or logistic regression, respectively.

Results: A total of 321 participants were included in the analyses (VLB: n=138; VLP: n=91; and VLS: n=93). After the program, we observed significant pre- to post-intervention weight loss (VLB=-2.4 kg±0.8; VLP=-2.8 kg±0.9; VLS=-3.3 kg±0.6) and increases in moderate/vigorous physical activity minutes (VLB=39.4 min±9.1; VLP=32.1 min±11.4; VLS=65.6 min±11.3), but no significant differences between these arms. Less VLP participants met recommendation of red meat (2 or fewer times in the past week; OR=.44, SE=.16, p=.023) and sugar-sweetened beverage (did not drink in the past week; OR=.37, SE=.14, p=.008) than VLB participants after the program. VLS participants were more likely to achieve clinically significant levels of weight loss (≥3%) (OR=1.54, SE=.30, p=.026) and reported higher program satisfaction than VLB and VLP participants ($\chi^2=30.13$, p<.001).

Conclusion: The VL weight loss program is a promising approach to facilitate weight loss by increasing physical activity and healthy eating behaviors among school district employees with overweight and obesity. More research is needed to formally evaluate this approach to community intervention.

Cancer Health Disparities

21

Adapting and Implementing Tailored Text Messaging to Improve Adherence to Cervical Cancer Screening Management

Kohler RE, Hemler J, Ayers C, Sullivan B, Wagner R, Macenat M, Hernandez N, Hipps L, Einstein M, Buckley-De Meritens A, Tagai E, Miller SM, Wen KY, Hudson SV

PURPOSE: Barriers to the management of abnormal cervical cancer screening tests remain unaddressed and contribute to disparities among underserved women. Text messaging is an accessible-but underexplored-intervention delivery channel for promoting adherence to follow-up through tailored barriers counseling.

METHODS: Content from an efficacious Evidence-Based Cancer Control Program phone counseling intervention (Tailored Communication for Cervical Cancer Risk-TC3) was adapted and a user centered design approach used to test texting protocols for a text message version of TC3 while assessing feasibility. In-depth interviews were conducted with 13 patients who had been referred for colposcopy within the last 12 months as well as 12 health care team members from 2 Colposcopy Clinics in Newark and New Brunswick NJ.

RESULTS: Patients' mean age was 43 years, 50% was non-Hispanic Black, and 11% was Hispanic. Staff included 67% MDs and 15% advanced practitioners; 25% were medical assistants. The majority was white (54%) and female (92%); Asian, Hispanic and non-Hispanic Black groups comprised 15% each. Both patients and clinic staff members described a need for the intervention and that texting is acceptable. Patients expressed having limited knowledge of HPV risk and colposcopy, confusion about the implications of screening results and next steps, and feelings of anxiety. They liked the concept of getting informational text messages, having additional support to answer their questions, and thought appointment reminders would be helpful. Clinicians were particularly supportive of providing education and counseling as part of screening results delivery, which nurses usually provide over the phone. Because scheduling colposcopy appointments can be challenging-especially with work and childcare conflicts-linking educational messages with appointment reminders was described as a key strength.

CONCLUSIONS: Stakeholder engagement found tailored text messaging to be a potentially useful dissemination strategy for increasing cervical cancer prevention education reach and impact. Providing education and actionable content via a mHealth intervention is a feasible and scalable approach to supporting both patients and clinicians during follow-up.

22 T

Association of Albumin and Colorectal Cancer Incidence in the Southern Community Cohort Study

Parlato L, Brent R, Walts Z, Cai Q, Steinwandel M, Zheng W, Blot WJ, Warren Andersen S

Purpose: Increased inflammation is a proposed mechanism defining the association between obesity and increased colorectal cancer (CRC) risk. We assessed the association between albumin, a biomarker of inflammation, and CRC incidence in a cohort that consists predominantly of African American and low-SES participants, two sub-populations disproportionately affected by CRC and obesity in the U.S.

Methods: Participant data arise from 904 Southern Community Cohort Study participants, where 69% of participants were African American, and 55% had income <\$15,000. Eligible participants were diagnosed with incident CRC and had serum albumin measurements; controls were matched 2:1 on age, sex, and race. Conditional logistic regression determined odds ratios and 95% confidence intervals for the associations of serum albumin concentration with CRC incidence, overall and stratified by sex, race, time since blood draw, and obesity status (BMI \geq 30). All analyses were adjusted for education, smoking, physical activity, alcohol intake, CRC screening, and family history of CRC.

Results: Serum albumin concentration was inversely associated with CRC risk, where the OR for per-standard-deviation increase was 0.86 (95% CI 0.74-0.99). Associations were strongest in participants with BMI \geq 30 (OR 0.79, 95% CI 0.66-0.94), who were female (OR 0.80, 95% CI 0.65-0.98), African American (OR 0.81, 95% CI 0.68-0.97), and diagnosed 5 or more years from blood draw (OR 0.77, 95% CI 0.64-0.93).

Conclusions: Our results support the role of an inflammatory mechanism in the association between obesity and CRC risk as low serum albumin can indicate a systemic inflammatory state, particularly in overweight and obese individuals. Our results show a consistent association between lower albumin concentrations and increasing CRC risk that is more prominent in obese participants. Previous studies have also reported lower average serum albumin in African Americans in comparison to whites, so the stronger association between low albumin and CRC risk found in African Americans in our study may also represent a contributing factor to the disproportionate burden of CRC in this sub-population.

23

Association of Residential Economic and Racial Segregation with Mortality in the U.S.

Zhang L, Gong R, Shi L, Wen M, Sun X, Islami F, Yabroff KR, Han X

Purpose: To examine the association of residential economic and racial segregation with the mortality from any causes, top 10 causes, and top 5 male and female cancer sites in the U.S.

Methods: Using the 2019 American Community Survey 5-year estimate data, county-level residential economic and racial segregation was measured by the Index of Concentration at the Extremes (ICE), showing the extent to which an area's residents are concentrated in extremes of deprivation and privilege. ICE values were categorized into quintiles. Age-adjusted mortality data (2015-2019) were obtained from the National Center for Health Statistics. Counties with Rural-Urban Continuum Codes (RUCC) 1-3 were categorized as metropolitan areas and others as non-metropolitan areas. Adjusted rate ratios (ARRs) and 95% confidence intervals (CIs) for the association between ICE and mortality were calculated using multilevel mixed modeling clustered at the state level, weighted by county population size, and adjusted for metropolitan status, median income, and the proportion of the population with non-White race. Data of 3,317 counties were extracted.

Results: Age-adjusted all-cause death rates in the five quintiles of ICE were 927.2 (most deprived), 898.2, 823.8, 770.0, 686.8 (most privileged), per 100,000 persons per year, respectively (P-for-trend<0.0001). Compared to the most privileged group, ARRs for all-cause mortality were 1.12 (95% CI: 1.10-1.15), 1.11 (1.09-1.13), 1.05 (1.03-1.17), and 1.01 (0.99-1.03), respectively. Age-adjusted cancer death rates for the five quintiles were 179.6, 177.4, 167.4, 159.8, and 146.1, per 100,000 persons per year, respectively (P-for-trend<0.0001). ARRs for cancer mortality were 1.13 (1.10-1.16), 1.10 (1.08-1.12), 1.05 (1.03-1.07), and 1.02 (1.01-1.04), respectively. ICE was also strongly associated with mortality from heart disease, chronic lower respiratory diseases, stroke, Alzheimer's disease, kidney disease, influenza and pneumonia, as well as cancers of the lung, female breast, colorectum, and pancreas.

Conclusions: County-level segregation is significantly associated with all-cause mortality and mortality from major diseases including cancer.

24 T

Association of the Affordable Care Act's Medicaid Expansion on Stage at Diagnosis and Timely Treatment for Four Common Cancers

Primm KM, Huepenbecker S, Zhao H, Sun C, Hernandez D, Meyer L, Chang S

The expansion of Medicaid under the Affordable Care Act (ACA) aimed to provide coverage to low-income individuals, a population at greater risk for disparities in access to health care. We evaluated whether Medicaid expansion was associated with changes stage at diagnosis and timely treatment for four common cancers. This quasi-experimental retrospective cohort study was limited to Medicaid and uninsured patients (aged 40-64 years) diagnosed with invasive (female) breast, cervical, colorectal (CRC), or non-small cell lung cancer (NSCLC) within the National Cancer Database. We examined the effect of Medicaid expansion on stage at diagnosis (stage I versus stage IV), and time to treatment initiation within 30 days and 60 days of diagnosis using multivariable difference-in-difference (DID) regression analyses, we compared changes outcomes before (2010-2013) and after (2014-2017) the expansion of Medicaid eligibility between patients living in expansion versus nonexpansion states. Of the 197,360 patients (69.0% women; mean [SD] age, 56.6 [9.1] years; 23.4% black; 4.3% Asian/PI; and 12.7% Hispanic) diagnosed with invasive breast (37.7%), cervical (5.8%), CRC (24.6%), or NSCLC (31.9%); 48.3% resided in expansion states and 54.8% resided in nonexpansion states. Compared with nonexpansion states, the percentage of stage I diagnosis of breast (DID=2.72; $p<0.001$), cervical (DID=4.37, $p=0.013$), CRC (DID=3.22; $p<0.001$), and NSCLC (DID=3.71, $p<0.001$) increased more in expansion states. During the same time, stage IV diagnosis decreased more in expansion states compared to nonexpansion states, and this was consistent across all four cancers ($p<0.05$ for all). Among the 177,568 patients who received treatment within 365 days of diagnosis, Medicaid expansion was associated with an increase in the percent of patients treated within 30 days of diagnosis for breast (DID= 2.72, $p=0.001$) and/or cervical cancer (DID=5.97, $p=0.002$). Changes in timely treatment of CRC and NSCLC were not statistically different between expansion and non-expansion states after 2014. Our results highlight the positive effect of the ACA's Medicaid Expansion on earlier diagnosis stage and timely treatment among groups most targeted by the policy.

25 T

Barrier Resolution Following Community-Focused Patient Navigation

Ver Hoeve, E.S., Klymko, I., Hernandez, D., Heitkamp, E., Hernandez, M., Calhoun, E., and Hamann, H.A

Purpose: To characterize the most common barriers reported by underserved cancer patients and to evaluate which barriers were most amenable to efficient resolution via community-focused patient navigation.

Methods: As part of a grant-funded implementation science project, a community-focused patient navigation program was

introduced at a NCI-designated Cancer Center between June 2018 and October 2021. Enrolled cancer patients reported on their barriers to care and worked one-on-one with a patient navigator over a 3-month period to resolve those barriers. The navigator systematically documented all efforts to address each barrier (i.e., #actions and time) per patient. At post-intervention, barriers were assessed as 'Addressed' (i.e., navigator able to provide resource) or 'Not Addressed' (i.e., navigator unable to provide resource). Data were then analyzed to evaluate: 1) barrier resolution rates and 2) associations between resolution rates and navigator efforts.

Results: To date, 202 participants have completed the intervention. Participants reported an average of 3.47 barriers to cancer care (range 1 - 11). Most commonly reported barriers included: 'Can't Afford Utilities' ($n=82$), 'Visual Impairment' ($n=76$), 'Can't Afford Housing' ($n=71$), and 'Public Transportation Not Easily Available' ($n=55$). Of those, 'Visual Impairment' was the barrier with the highest resolution rate (93% 'Addressed'). Barriers with high resolution rates varied in their numbers of average actions required for resolution but did not vary by time (i.e., most actions took < 15 min). For example, 'Can't Afford Cancer Treatment, Test, or Device' (95% addressed) required, on average, 10 actions to address, whereas 'No Dental' (87% 'Addressed') required only 2 actions.

Conclusions: Underserved patients face unique challenges in accessing quality cancer care. Our results suggest that certain barriers require different amounts of patient navigator effort to resolve. Detailed analyses of patients' most common barriers to cancer care and calculations of patient navigators' efforts at reducing those barriers represents an innovative step toward enhanced patient navigation efficiency and, ultimately, toward improved resource allocation.

26

Black and Deaf: Left Behind in Cancer Screening

Kushalnagar P, Perrodin-Njoku E

Purpose of the Study: To understand the prevalence of lifetime cancer diagnosis in a Black deaf and hard of hearing (DHH) adult sample and compare this to a Black hearing sample.

Methods: The NCI's health information national trends survey (HINTS) was translated and validated in American Sign Language (ASL). The HINTS-ASL version was administered to DHH adults in U.S. Using HINTS-ASL survey for DHH adults and HINTS survey in English for hearing adults in the U.S., self-reported data was gathered for lifetime cancer as diagnosed by healthcare providers. For HINTS-ASL, a subsample of about 200 self-identified as Black DHH. This HINTS-ASL data from this Black DHH subsample was compared to NCI HINTS sample of hearing respondents who self-identified as Black (about 400).

Results: The study showed that Black DHH adults had a higher likelihood for reporting lifetime cancer and comorbidity compared to their hearing Black counterparts. Far fewer Black DHH respondents who use ASL (58%) regularly see their doctors compared to Black hearing respondents (70%) even though most of both subsamples had health insurance.

Conclusion: Black DHH adults are at disparity for cancer health outcomes, including primary care visits, compared to the general Black adult population. This is particularly concerning because cancer screening recommendations often come up during primary care visits. If Black DHH adults are not getting regular health care services, then they may not be receiving the necessary preventive cancer screenings recommended by the CDC. There needs to be actionable plans to address cancer health disparity in this population.

27

Cancer Health Awareness through Screening and Education (CHANGE): A Community Approach to Healthy Equity

Vernon MM, Jones, S, Moore, JX, Coughlin SS, Heboyan V, Clarke S, Idun B, Tingen MS

PURPOSE. The goal of the CHANGE project is to provide a sustainable model of evidence-based cancer awareness through education - with an emphasis on prevention and early detection behaviors. Using community based patient stories, we seek to impact health equity by developing a health disparities and culturally competent cancer care e-Learning curriculum for health care professionals, hematology-oncology fellows, residents, and medical students at the Medical College of Georgia.

METHODS. Thirty community members and stakeholders (93% African American (AA), 76% female, all adults) were recruited through public housing, healthcare clinics and providers, and community organizations. Vignettes describing patient access and care interactions were used in semi-structured interviews to guide conversations about experiences accessing care, attitudes towards cancer prevention, and community cancer beliefs. Interviews were recorded, professionally transcribed, and content analyzed using NVivo 12.0 by two independent raters.

RESULTS. Three common themes emerged: accessibility of health-care, cancer myths and cultural norms and the experience of racial bias in health care. Subjects shared stories of difficulties accessing public transportation, with delays that caused appointment re-scheduling - up to 2 months later, impacting preventive and clinical cancer care. Subjects shared community norms such as “cancer is contagious,” “faith will heal me,” and “treatment of cancer is about making money.” In addition, mistrust of providers was defined by misunderstanding or unclear instructions on medication and a lack of follow up by providers. Numerous references to historical mistreatment of AAs informed a general cautiousness about interactions with healthcare providers, and a perception of racial bias in their receipt of healthcare.

CONCLUSION. This sample adequately represented those most at risk for cancer in Augusta, GA area. Their shared experiences will be used to inform provider education on health disparities across the state and specific to the local community. This will impact health equity by emphasizing a comprehensive approach to care that will begin to improve patient satisfaction and health outcomes.

28

Cardiovascular Disease Mortality among Breast Cancer Survivors in the US by Socioeconomic Status

and Rurality, 2000-2018

Ho KL, Shiels M, Ramin C, Veiga L, Berrington de Gonzalez A, Vo JB

Purpose: Cardiovascular disease (CVD) mortality among breast cancer survivors may be influenced by county-level socioeconomic status (SES) factors and degree of rurality.

Methods: We examined CVD mortality among first primary localized/regional breast cancer survivors (diagnosed between 2000-2017; aged 18-84; survived 12+ months; received initial surgery) in the US 18 Surveillance, Epidemiology, and End Results program, and compared to the general population using standardized mortality ratios (SMRs; observed/expected), adjusted for age, race, and calendar year. Analyses were stratified by stage and quintiles of county-level SES (measured via Yost Index; lowest quintile=low SES, highest quintile=highest SES) and degree of rurality, ascertained from the American Community Survey. We also estimated 10-year cumulative CVD mortality by rurality accounting for competing non-CVD deaths.

Results: Of 724,609 breast cancer survivors, 30,005 died of CVD through 2018 (median follow-up=7.5y). There were large differences in CVD SMRs by county-level SES quintiles: for localized cancers, SMR=0.96[95%CI=0.94,0.99] for the lowest vs SMR=0.70[95%CI=0.68,0.72] for the highest SES quintile; for regional stage cancers, SMR=1.21[95%CI=1.16,1.27] for the lowest vs SMR=0.85[95%CI=0.81,0.90] for the highest quintile. There were similar differences by rurality with CVD SMRs: for localized cancers, SMR=0.96[95%CI=0.90,1.02] for most rural counties vs SMR=0.78[95%CI=0.76,0.79] for most urban; for regional stage, rural SMR=1.18[95%CI=1.07,1.30] vs urban SMR=0.96[95%CI=0.94,0.99]. 10-year CVD cumulative mortality estimates for localized cancers were 5.37% [95%CI=5.00,5.76] in the most rural counties and 4.09%[95%CI=4.01,4.18] for urban; for regional cancers: rural 4.70%[95%CI=4.22,5.22] vs. urban 3.32%[95%CI=3.21,3.43], accounting for competing non-CVD deaths.

Conclusion: Breast cancer survivors living in counties of higher SES and more urban have lower CVD SMRs than counties of lower SES and higher rurality, and disparities were greater among regional stage. We also observed a >1% absolute CVD mortality risk difference between rural and urban counties. Future studies are needed on the intersection of individual and county-level SES determinants (e.g., resources and access to healthcare).

29 T

Cardiovascular Health Among Black Breast Cancer Survivors in the Women's Circle of Health Follow-Up Study

Babel RA, Bandera EV, Lin Y, Zeinomar N, Demissie K, Hong CC, Qin B

Background: Breast cancer (BrCa) survivors have higher risk of cardiovascular disease (CVD) mortality compared with women without cancer. Cardiovascular health (CVH), defined by the American Heart Association which integrates 7 modifiable components (BMI, physical activity, diet, smoking, blood pressure, total

cholesterol, and blood glucose), has been demonstrated in predicting CVD incidence and mortality. However, CVH has not been well characterized among Black BrCa survivors, who have a greater risk of mortality than any other racial/ethnic group.

Objective: To evaluate CVH in the Women's Circle of Health Follow-Up Study (WCHFS), a population-based prospective study of Black BrCa survivors in New Jersey.

Methods: The current study included 720 participants diagnosed between 2012-2017 who completed follow-up 1 home interview (~24 months post diagnosis) by September 2019. Data on individual CVH components were collected via measurements, questionnaires, medical records, and/or blood samples. Using the established method, a CVH score (range: 0-14) was summed across the seven individual components (0=poor; 1=intermediate; 2=ideal) for each participant. A higher score indicates better CVH health. The analyses were repeated using multiple imputations by chained equations to complete the missing values. We also compared the CVH scores with the findings published from NHANES.

Results: Among Black BrCa survivors in the WCHFS, the CVH score was normally distributed with a mean 7.5 (95% CI: 7.4-7.7) based on the imputed analysis. Results are materially the same as complete case analysis. Only 2.4% women had a high CVH score of ≥ 12 while 66.6% had a low CVH score of < 8 . Among all CVH components, the lowest prevalence of ideal level was for BMI, diet, and blood pressure (14.2%, 0%, and 22.8%, respectively). Black BrCa survivors from our study had lower CVH scores compared to women of all races combined from NHANES (mean [95% CI]: 8.0 [7.9-8.2]).

Conclusion: We found that poor CVH health was common among Black BrCa survivors, primarily attributed to high prevalence of obesity, hypertension and poor diet. Further research should evaluate the multilevel risk factors for poor CVH to reduce the excess mortality among Black BrCa patients.

30

Comparative Effectiveness of Interventions to Improve Screening for Three Cancers among Rural Women: A Randomized Trial

Champion VL, Paskett ED, Katz ML, Monahan PO, Stump TE, Baltic RD, Vachon EA, Biederman EB, Rawl SM

Purpose: This study tested the comparative effectiveness of tailored messaging delivered via a mailed DVD vs. mailed DVD + telephone-based patient navigation (PN) vs. usual care to increase the proportion of rural women up to date (UTD) with breast, cervical and colorectal cancer screening.

Methods: A total of 963 rural women 50 to 75 years of age and not UTD with guideline-based screening recommendations for at least one cancer (breast, cervical and colorectal) were randomized to usual care, a mailed DVD or a DVD + PN group. Women were recruited through purchased contact lists, community recruitment and Facebook. The DVD was developed to interactively provide messages related to health beliefs that included perceived risks of cancer, benefits, and barriers to screening, and perceived self-efficacy for obtaining needed screening tests (not UTD at baseline).

The PN group included counseling women on barriers to obtaining needed screenings. The intervention was developed to simultaneously support obtaining screening for all or any cancer screening tests that were outside of guidelines at baseline.

Results: The mean age of women was 58.6 years, 97% were non-Hispanic white and 77% were married. At 12-month post intervention, 15% of women in the DVD intervention had received all needed tests compared to 9% in usual care (OR = 1.90, $p = 0.035$). The addition of PN to DVD increased the percentage of women receiving all needed screenings (49%) compared to usual care with an odds ratio of 5.77 ($p < 0.001$). For any needed screening, the combination (DVD + PN) intervention (but not DVD alone) was significantly more effective than usual care (OR = 3.81). Women who needed only mammography were more likely to become UTD with all screening tests (OR = 21.0) or any needed test (OR = 1.58).

Conclusions: The addition of PN to a DVD greatly increased the percentage of women receiving all or any of the needed cancer screening tests (not UTD at baseline) after adjusting for other prognostic covariates. An intervention designed to simultaneously increase cancer screening for three cancers among rural women was efficacious and these interventions can be remotely delivered, demonstrating potential for implementing this evidence-based intervention in rural areas.

31 T

Comparing the Impact of Interventions on Psychosocial Facilitators to Breast Cancer Screening among Latinas

Lee E, Arroyo J, Medina M, Coronado N, Hernandez O, Lucio A, Molina Y

Purpose: Empowerment interventions - training Latinas who are non-adherent to breast cancer screening guidelines to be leaders in their community - appear to have greater effects on mammography use than education (72% vs. 48%). The current study seeks to identify potential mechanisms, including knowledge, self-efficacy, norms, supportive family/friend networks.

Methods: The current study builds from a quasi-experimental trial in Chicago, IL. Eligible individuals were recruited through community venues and participated in one of two interventions. Eligibility criteria included: (1) identifying as Latina/Chicana/Hispanic; (2) living in targeted community areas; and, (3) not being adherent to US Preventive Services Task Force guidelines. Each study arm included the identical intervention format (e.g., three group sessions), but location and content differed. In South Chicago, the education intervention provided participants with the tools to obtain breast cancer screening and engage in healthy lifestyles (diet, physical activity). In West Chicago, the empowerment intervention provided participants with the tools to obtain breast cancer screening and promote information throughout their networks. We used generalized estimating equation (GEE) models to assess interactions and stratified models to interpret interactive effects.

Results: Among the 110 participants, 73% were 52-64 years old, 42% did not have insurance, and 38% had not obtained a

mammogram in the past 4 years. While study arms were similar at baseline ($p=.37$), empowerment participants had greater sustained knowledge than education post-intervention ($B=.49$, 95%CI[.14,.85], $p=.007$) and at 6 months (0.52 , 95%CI[.19,.86], $p=.002$). Study arms differed in self-efficacy at baseline ($B=2.14$, 95%CI [0.59, 3.69], $p=.007$), but not post-intervention ($ps=.35-.87$). Study arms were comparable in norms and supportive family/friend networks across time.

Conclusion: The empowerment intervention was effective in increasing and sustaining knowledge across 6 months - which may have led to study arm differences in mammography use. Findings highlight potential mechanisms of underlying health-protective effects of leadership/volunteerism for changing behaviors in a non-English speaking Latina population.

32 T

Deploying Virtual Clinicians to Reduce Racial Disparities in Young-onset Colorectal Cancer: Experiences of Black Adults with a Culturally-tailored Telehealth Intervention

Cooks E, Vilaro M, Maxim A, Tang K, Wang S, Lok B, Sattari M, Wilson-Howard D, Krieger J

Purpose: When the USPTF updated colorectal cancer (CRC) screening guidelines in 2021, millions of adults aged 45-49 became screening eligible. Scalable communication strategies are needed to navigate this new cohort to screening. Questions remain if strategies should differ between younger and older groups. Delivering CRC prevention messages with virtual clinicians (VCs) may identify optimal age-specific strategies.

Methods: A secondary analysis of Black adults' ($N = 772$) experiences with an interactive VC was conducted. Participants self-reported perceptions of usability, motivation to discuss screening, social presence (i.e., perceiving the VC as a real person), transportation (i.e., visualizing oneself in the virtual exam room), and VC appearance (e.g., natural gestures). Responses assessed on a 5-point Likert scale from adults aged 45-49 (newly screening eligible) were compared to those aged 50-73 using a Wilcoxon rank-sum test.

Results: Younger adults rated the intervention as easier to use ($Mdn= 3$, $M= 3.3$, $IQR= 3-3.5$) vs. older adults ($Mdn= 3$, $M= 3.1$, $IQR= 2.8-3.2$), $p < .001$. After their virtual appointment, younger adults perceived less social presence ($Mdn= 3$, $M= 3.3$, $IQR= 2-4.2$) vs. older adults ($Mdn= 3$, $M= 3$, $IQR= 2-4$), $p = .004$, but felt more transported into the virtual setting ($Mdn= 3$, $M= 2.6$, $IQR= 1-4$) vs. older adults ($Mdn= 2$, $M= 2.3$, $IQR= 1-3$), $p = .001$. Further, younger adults were more motivated to discuss screening with family ($Mdn= 4$, $M= 3.8$, $IQR= 3-5$) compared to the older group ($Mdn= 3$, $M= 3.4$, $IQR= 3-5$), $p = .003$. Lastly, younger adults rated the VC as more similar in age ($Mdn= 4$, $M= 3.6$, $IQR= 3-4$) than did older adults ($Mdn= 3$, $M= 2.8$, $IQR= 2-3$), $p = <.001$, and more likeable in appearance ($Mdn= 4.2$, $M= 4.1$, $IQR= 3.8-5$) than older adults ($Mdn= 4$, $M= 3.9$, $IQR= 3.2-4.8$), $p = .01$.

Conclusions: Young Black adults perceive VCs positively, engaging, and easy to use. Despite the VCs being perceived as less realistic by the younger cohort, transportation and motivations to discuss screening options were still high among this group. Findings

indicate that VC-led interventions promoting CRC screening are appropriate for younger Black adults. Future studies should assess how age-related differences in patient experience impact screening behavior.

33 T

Discrimination and Racial/Ethnic Identity May Influence a Patients' Beliefs About Their Cancer: Analysis of SKCC Catchment Area Surveys

Smith BC, Ali A, Shimanda A, Smith A, Okere S, Hines K, Leader A, Simone N

Purpose of the study: To assess how racial identity and experiences with discrimination impact patients' attitudes about cancer and the autonomy they have over their cancer diagnosis

Methods: Two surveys were utilized to recruit participants, The Southeastern Pennsylvania Household Health follow-up survey and an Online Survey administered to New Jersey and Pennsylvania residents that live in the Sidney Kimmel Cancer Center (SKCC) catchment area. We conducted the survey using five cancer belief items to assess patient outlook about cancer. Additionally, the everyday discrimination scale (EDS) was used to further assess how discrimination influenced participants beliefs about cancer. Racial/Ethnic identity of participants was also obtained to further assess how racial/ethnic identity influenced participants' beliefs about cancer.

Results: Between 2018 and 2019 1,557 participants completed this survey. Participants that experienced discrimination a few times a year or more were more likely to believe that there is nothing you can do to lower your cancer risk. (EDS 2.1-2.7 $p<0.001$) We also found that a higher percentage of Caucasian participants agree that there are things you can do to lower cancer risk when compared with our Hispanic/Latino and African American participants. ($p<0.001$) Additionally the belief that a cancer diagnosis was equivalent to being told you would die was believed by 38.6% of Hispanic/Latino participants, which is around 2x higher than that of Caucasian participants, 19.4%. ($p<0.001$)

Conclusions: Discrimination and race can play a major role in cancer beliefs that patients have and contribute to differing outcomes seen amongst patients diagnosed with cancer. This may impact choices patients make regarding cancer treatment, as well as behavior and lifestyle factors that patients engage in that impact risk for cancer. Education aimed to narrow knowledge gaps is prudent for providers to understand that historic experiences with discrimination may influence a patients' healthcare decisions, and that patients should be educated about the positive impact lifestyle changes may have on cancer outcomes based on randomized clinical data.

34

Disparities in HPV Vaccine Recommendation and On-Site Administration among a National Sample of Pediatric Oncologists

Shay LA, Allicock M, Betts AC, Murphy CC, Preston S

Purpose: Childhood cancer survivors (CCS) have a higher risk of human papilloma virus (HPV)-related cancers but low uptake of the HPV vaccine. We examined predictors of HPV vaccine recommendations and on-site administration in a national sample of pediatric oncologists.

Methods: We recruited pediatric oncologists via email to complete an online survey of HPV vaccination practice, attitudes and beliefs about HPV vaccination, and barriers administering HPV vaccines. Oncologists' email addresses were identified from a medical marketing database (SK&A by IQVIA). We used logistic regression models to identify correlates of: 1) oncologist discussing or recommending HPV vaccination; and 2) practice offering on-site administration of HPV vaccines.

Results: A total of 195 pediatric oncologists completed the survey (15% response). Just over half reported that they always or usually discuss or recommend the HPV vaccine (57%), but only 43% were in practices that offered on-site administration of the HPV vaccine. Correlates of HPV vaccine discussion or recommendation included female sex (OR=2.83, 95%CI:1.34-6.00) and ≥ 20 years in practice (OR=3.08, CI:1.28-7.41). Oncologists who believed primary care providers (PCPs) should handle HPV vaccine recommendation were less likely to discuss or recommend the vaccine themselves (OR=0.12, CI:0.05-0.29). On-site vaccine administration was less common in practices with majority non-White patients and among oncologists who believed PCPs should recommend the vaccine. (OR=0.30, CI:0.14-0.67). A higher proportion of oncologists who believed PCPs should recommend the vaccine were in practices with majority non-White patients (36% vs 23%, $p<0.05$) and with majority patients receiving Medicaid (37% vs 23%, $p<0.05$).

Conclusions: Pediatric oncologists represent a critical target for increasing HPV vaccination in high-risk cancer survivors. A higher proportion of practices with majority non-White patients do not provide on-site vaccine administration, potentially exacerbating cancer disparities. Oncologists seeing majority non-White and Medicaid patients are also more likely to defer responsibility for HPV vaccination to PCPs. Future interventions should target these practices to decrease health disparities.

35

Disparities in Lung Cancer Screening Accessibility and Utilization in South Carolina

Zhang L, Launius B, Gong R, King J, Sun X, Kilpatrick D, Dickey M, Tully E, Cartmell K, Mayo R, Gimbel R

Purpose: 1) To investigate the differences in lung cancer screening (LCS) accessibility by county level rurality and other socioeconomic status (SES) factors in South Carolina (SC); 2) To examine the individual and county level predictors of LCS utilization.

Methods: A list of LCS sites were identified from the American College of Radiology. We defined access to LCS as <30 minutes driving time from the centroid of the census block group to the nearest LCS site. At a county level, the access of each block group was weighted by the proportion of population aged 55-80 years in the county. County level rurality was determined by Rural-Urban Continuum Codes, with 1-3 for urban counties and 4-9 for rural

counties. County level income, education, and the prevalence of minority population were obtained from Census 2010. Data from 2017 SC Adult Tobacco Survey (ATS) was used to examine the individual level (age, sex, race, education, marital status, insurance, income, smoking status, chronic obstructive pulmonary disease (COPD)) and county level predictors (rurality, LCS accessibility) of LCS utilization. Chi-square test, Students' t-test, Pearson correlation, and multilevel logistic regression were used in the analyses.

Results: SC has 46 (26 urban and 20 rural) counties. As of August 2021, 72 population-based LCS sites have been established, including 63 sites located in 18 urban counties and 9 sites in 9 rural counties. The driving time to the nearest LCS site ranged from <5 to 60 minutes, with an average of 13.7 minutes. Overall, 74.9% of the residents aged 55-80 had access to LCS. About 85.4% of urban residents vs. 61.3% of rural residents had access to LCS ($P=0.004$). Counties with worse SES had significantly lower access to LCS ($P<0.05$). A total of 1,441 current or former smokers aged 55-80 were identified from ATS data, of whom 19.8% used LCS. Being female, black, and having COPD were significantly associated with increased LCS utilization. County level rurality and LCS accessibility were not significant predictors.

Conclusions: In SC, residents in the rural counties and counties with lower SES had less access to LCS. After adjusting for individual level covariates, county level covariates were not significant in predicting LCS utilization.

36

Disparities in Telehealth for Oncology Encounters During COVID as a Function of Race, Ethnicity, and Insurance Type

Yu J, Battalia S, Pfammatter A, Hedeker D, Spring B

Purpose: Since it is unclear whether telehealth increases underserved patients' access to cancer care or decreases it due to a digital divide, we studied whether telehealth use differs in relation to patients' racial and ethnic background and primary insurance.

Methods: We used Northwestern Medicine's (NM) enterprise data warehouse to identify adult cancer patients with at least one oncology encounter between 6/1/2020 and 5/31/2021 at one of NM's 151 Chicago area cancer clinics. Encounters were classified as telehealth or in-person and patients' age, sex, race, ethnicity, and primary insurance were extracted. Logistic regression analyses, controlling for age, estimated the odds of having any telehealth oncology visit for Asian, Black, and Hispanic patients compared to non-Hispanic White, and for primary insurance from Medicare, Medicaid, and self-pay compared to private plan. Proportion of total oncology encounters completed by telehealth was contrasted by patient race, ethnicity, and insurance type via incidence rate ratios (IRR).

Results: Of 51,135 eligible patients, 43% had at least one telehealth encounter during the study period. The odds ratio (OR) for having a telehealth encounter was greater for Asian (OR: 1.11; CI: 1.01, 1.22) and Black (OR:1.33; CI: 1.25, 1.42) than non-Hispanic White patients. Primary insurance from Medicare (OR:1.35; CI: 1.28, 1.42) and Medicaid (OR: 1.37; CI: 1.24, 1.51) resulted in greater odds of having a telehealth encounter compared to private plans.

Among telehealth users, Black (IRR: 0.97) and Hispanic (IRR: 0.95) patients received proportionally less telehealth than White patients, and those primarily insured by Medicare (IRR: 0.97) and Medicaid (IRR: 0.93) received proportionally less telehealth than those in private plans.

Conclusions: Among adults receiving cancer care at NM during COVID, racial minorities and publicly insured patients showed increased odds of accessing any telehealth oncology care, but received a smaller proportion of total cancer care via telehealth compared to white or privately insured patients. This paradox raises questions regarding the nature of encounters, type of provider who delivered care, patient and oncologist telehealth preferences, and whether utilization patterns will persist post-COVID.

37

Examining Barriers to Implementing Evidence Based Interventions for Colorectal Cancer Screening in Federally Qualified Health Centers: A Multi-method Approach

Savas, LS, Rosen, A, Costa, C, Walker TJ, Craig DW, Frachiseur GA, Dias EM, Padilla, JR, Hines DL, Valerio MA, Fernandez ME

Purpose: To conduct a needs and readiness assessment to identify factors influencing implementation of evidence-based interventions (EBIs) for colorectal cancer screening (CRCS) in federally qualified health centers (FQHCs).

Method: As part of the CDC-funded Colorectal Cancer Control Program (CRCCP) in Texas, we worked with 7 clinics (5 rural and 2 urban) from 2 FQHC systems. We used a comprehensive needs and readiness framework to guide data collection. We gathered data on: clinic characteristics, workflow, electronic health records (EHR), use of EBIs (e.g., patient reminders, provider reminders, reducing structural barriers), implementation supports, and organizational readiness defined by the R=MC2 heuristic (Readiness = Motivation x General Capacity x Innovation Specific Capacity). We then used a multi-method approach that included in-depth interviews, clinic-level surveys, and direct workflow observations in each clinic. We used rapid qualitative analysis to analyze qualitative data and a content analysis approach to examine quantitative and observational data. We synthesized findings across data sources to identify implementation barriers and gain a thorough understanding of how they influenced implementation efforts.

Results: Findings from the needs and readiness assessments revealed several individual, clinic, and system-level barriers to implementation of CRCS EBIs. Notable barriers at the provider and staff level included- lack of comprehensive knowledge of EHR system, of CRCS modalities available in clinics, and of resources to address barriers. Clinic level barriers included staff turnover and competing priorities (including EHR optimization) and leadership support for system-level changes. System level barriers included lack of funds to update EHR system. Survey results revealed clinics had higher levels of motivation and general capacity for implementation, and lower levels of implementation specific capacity.

Conclusions: Results indicate multiple barriers to implementation across levels, that if addressed, could improve implementation

efforts. The multi-method approach allowed for a comprehensive understanding of barriers to further inform the development of clinic-specific implementation strategies to accelerate and improve CRCS EBI use.

38

False-Positive Screening Mammography and Long-Term Adherence among Uninsured Women in a Community Outreach Program

Nair RG, Lee SJC, Zhu H, Arjmandi FK, Berry E, Argenbright KE, Tiro JA, Skinner CS

Purpose of the study: False-positive screening mammogram has been associated with anxiety, distress and consequent increase in short-term breast cancer screening adherence. However, little is known about the relationship between false-positive mammogram and screening adherence (both short-term and long-term) among ethnically diverse uninsured women enrolled in community outreach programs. The Breast Screening and Patient Navigation (BSPAN) Program provides access to no-cost breast cancer screening and diagnostic services to uninsured women in North Texas. Using longitudinal BSPAN data (2012-2019), we report prevalence of baseline and longitudinal adherence after a false-positive screening mammogram (Aim 1) and associations of baseline and longitudinal adherence with false-positive results (Aim 2).

Methods: Outcomes were baseline adherence (women categorized as adherent if they received their second mammogram 9-30 months after the index mammogram) and longitudinal adherence (assessed only among women categorized as baseline adherent and defined as being adherent after 39 months from the index mammogram). False-positive result was defined as a positive screening mammogram followed by a negative diagnostic mammogram or a negative biopsy within 1 year of the screen. We used multivariable logistic regression and multivariable Cox proportional hazards model to assess associations of false-positive results with baseline and longitudinal adherence, respectively.

Results: Of 19,292 women included for analyses, 1,873 (9.7%) had false-positive screening mammogram results. Of these, 832 (44.4%) were baseline adherent, and 31.8% (596 women) were longitudinally adherent. Adherence, both short-term and long-term, was positively associated with false-positive results. Women who had a false-positive screening result were more likely to be baseline adherent (adjusted odds ratio 4.7, 95% Confidence Interval 3.8-5.7) and longitudinally adherent (adjusted hazards ratio 1.2, 95% confidence interval 1.1-1.4) compared to women without a false-positive result.

Conclusions: Breast cancer screening adherence increases both in the short-term and long-term after a false-positive screening mammogram, among ethnically diverse uninsured women enrolled in community outreach programs.

39

Implementing an Adapted and Evidence Based Weight Loss Intervention for Latina Cancer Survivors during the COVID-19 Pandemic

Manriquez Prado A, Young S, Kamaraju S, Sheean P, Contre-

Purpose: Latina cancer survivors are more likely than non-Hispanic white survivors to have overweight/obesity. Weight status contributes to racial/ethnic disparities in recurrence risk, quality of life, and comorbidities. The efficacious Moving Forward weight loss intervention developed with/for African American breast cancer survivors was adapted for Latina Breast and Gynecological Cancer Survivors (LBGCS). We conducted a randomized pilot to assess feasibility and potential efficacy. We also explored COVID-19 impact on participation.

Methods: BGCs self-identified as Latina/Hispanic, BMI of >25 kg/m², diagnosed with stage 0-III breast or gynecologic cancer, and 3+ months post treatment were recruited. We collected data pre- and post-intervention on weight, diet, physical activity, strength, QOL, program satisfaction and COVID-19 impact on program experience/engagement. Recruitment began before COVID-19, halted, and then re-started late-Summer 2020. Recruited women were randomized to the 16-week guided (G) or self-guided (SG) intervention. The G-Group attended 2x-weekly classes led by bilingual, bicultural, fitness-certified instructors. The SG-group received the same curriculum materials, but no classes. COVID-19-related accommodations included live streaming classes via ZOOM, social distancing/mask policies and others.

Results: 33 LBGCS consented before the COVID-19 outbreak; 7 withdrew due to COVID-19 related reasons, 26 completed baseline data collection and were randomized to the G-(n=12) or SG-Group (n=14). 96% were retained post-intervention. Neither group had significant weight change. The G-group had improved handgrip strength (p=.001), leg strength (p=.003), greater greens/beans (p=.014), reduced added sugars (p=0.376), reduced perceived stress (p=.027) and less sleep disturbance (p=.007). COVID-19 impacted themes including technology access/support, difficulties enacting

program recommendations due to pandemic-related fear/anxiety, and positive program support experiences.

Conclusion: Program feasibility/acceptability were demonstrated. Weight loss was not achieved, but diet and physical activity were impacted. COVID-19 affected recruitment and program activities, yet strengths include continued engagement, positive feedback, and behavior change.

40 T

Informing the Implementation Pathway for Addressing HPV Vaccine Hesitancy and Uptake Across Diverse Communities in Los Angeles

Shin MB, Sloan KE, Martinez BM, Soto C, Baezconde-Garbanati L, Unger J, Kast WM, Cockburn M, Tsui J

Purpose of the study: This qualitative study aims to understand HPV vaccine hesitancy and uptake among diverse parents to inform culturally specific, multilevel approaches for removing barriers and enhancing vaccine uptake.

Methods: We recruited parents of children (9-17 years unvaccinated for HPV) from communities with low uptake in Los Angeles

area for virtual focus groups (FGs) in English (2), Mandarin (1), and Spanish (1) between June-August 2021. One English FG was with American Indian (AI) identifying parents. FGs prompted discussions about HPV vaccine knowledge, sources of vaccine information/hesitancy, logistical barriers and interpersonal, healthcare and community interactions regarding HPV vaccination. Guided by the socioecological model, we identified emerging themes at the individual, interpersonal, community and societal levels.

Results: All 4 FGs (19 parents) reported multiple sources of health information at the individual level. Both English FGs emphasized the internet, and Mandarin FG discussed native language radio/news. All FGs discussed interpersonal interactions with providers, friends and family including children about vaccine decision-making. All FGs shared complex navigation of relationships/sources to find trustworthy information and encountering HPV vaccine misinformation (e.g., causing aggressive behavior). The COVID-19 vaccine attitudes for their children did not necessarily align with HPV vaccine attitudes (e.g., some received COVID-19 vaccine but not HPV). At community level, historical events contributed to mistrust (e.g., concerns that vaccines may lead to sterilization [Spanish], and fragmented medical care due to forced community displacement [AI]). At societal level, barriers included lack of school nurses and transportation (Spanish, AI), and time off from work (Mandarin). Medical mistrust contributed to HPV vaccine hesitancy across FGs and levels.

Conclusions: Our findings highlight differing sources of health information across communities amidst heightened impact of vaccine misinformation during the pandemic. Barriers and facilitators of HPV vaccine uptake (e.g., medical mistrust) varied by communities' historical context and emphasize the need for tailored multi-level approaches to address them in diverse populations.

41

Masculinity Barriers to Colorectal Cancer Screening Completion among American Indian/Alaska Native, Black, and White men (ages 45 - 75)

Korous KM, Perdue DG, Boucher K, Brooks E, Petersen E, Inadomi JM, Tuuhetaufa F, Levant RF, Paskett ED, Rogers CR

Background. Colorectal cancer (CRC) mortality is largely preventable and treatable with early detection screening, yet significant racial disparities remain for non-Hispanic Black and American Indian/Alaska Native (AIAN) men. Research is necessary to elucidate the factors leading to disparate CRC screening rates and inequitable healthcare utilization among Black and AIAN men. We aimed to determine if masculinity barriers to medical care influence CRC screening completion among Black and AIAN men compared to Non-Hispanic White men (ages 45 - 75).

Methods. A population-based survey study was employed online between December 2020 and January 2021. Participants self-reported CRC screening history and completed our previously validated Masculinity Barriers to Medical Care (MBMC), Psychosocial Factors, and CRC Screening survey. Logistic regression models were fit to each of the four MBMC subscales predicting ever having had CRC screening. The odds of reporting CRC screening were compared to 4 subscales from the MBMC and were adjusted for

marital status, education, insurance status, having a regular provider, and having a family history of CRC.

Results. The cohort (N=435) consisted of 136 AIAN, 99 Black, and 200 White men, of which 49% were age 45-59 and 51% age 60-75. Overall, 68% reported previous CRC screening, with the older cohort having a >3-fold increased odds of screening. For all men combined, a unit increase in the Being Strong subscale was associated with a 54% decreased odds of CRC screening (OR 0.46, 95% CI 0.23 to 0.94; P=.034), while a unit increase in Negative Attitudes Towards Medical Professionals and Exams decreased the odds of screening by 57% (OR 0.43, 95% CI 0.21 to 0.86; P=.018). There was also evidence of an effect modification by race with Black men scoring higher on the Negativity Towards Medical Professionals and Exams having decreased odds of screening.

Conclusions. Constructs of masculinity play an important role in determining men's participation in CRC screening. Additional study is needed to understand how masculinity barriers might be overcome to motivate CRC screening completion.

42

Multi-Level Factors Reported in Colorectal Cancer Screening Adherence Studies Reflect Evolving Challenges and Opportunities in Different Care Settings: A Systematic Review

Carroll LN, Chang ML, Fransen S, Putcha G, Gupta S, Murphy CC

Purpose: This study utilizes data from a systematic literature review to explore commonly reported factors influencing colorectal cancer (CRC) screening adherence across care settings.

Methods: PubMed, Embase, and CENTRAL trial databases were searched on 10/23/2020 for studies published in 01/01/1950-12/31/2020 on factors that impact CRC screening adherence among average-risk adults in the U.S. Iterative thematic coding of extracted data identified multi-level predictors of adherence (test, patient, provider, site, & neighborhood) and five study settings (primary care, specialty care, integrated system, safety net, & regional cross-sectional surveys). This subanalysis included studies defining adherence as test completion within a study-defined timeframe (n=28) and grouped them as recent (2017-2021, n=6) or older (1990-2016, n=22).

Results: Across settings, 72.9% of predictors were patient factors, primarily demographics and perceived importance of screening. The most common factors by level were convenience (test), age (patient), provider recommendation (provider), programmatic screening (site), and federal poverty level (neighborhood). The proportion of each multi-level predictor varied by setting. For example, the breakdown for integrated care was 79.2% patient, 11.7% provider, 5.2% site, and 3.9% test factors, whereas safety net was 71.4% patient, 16.7% test, and 11.9% site factors. The proportion of neighborhood factors doubled and site factors tripled in recent studies, driven by changes in specialty care and safety net settings, respectively. Patient health status & behavior factors were more common in recent studies (33.3% vs 17.8%), especially in integrated care. In addition to continued support for programmatic screening, recent studies advocated for incorporating patient preferences and culturally-competent materials to increase adherence.

Conclusions: While the breakdown of multi-level factors differed by setting, patient factors were the most common predictors of adherence. The diversity of factors reflect key differences in study settings and offer insights into the populations they serve. Recent studies highlight the growing importance of site and neighborhood factors, and encourage more inclusive strategies to reach national CRC screening goals.

43

Multilevel Determinants of Physical Activity Adoption and Maintenance in Rural Breast Cancer Survivors

Mama SK, Schmitz KH

Purpose: Ecologic frameworks account for multilevel factors related to leisure-time physical activity (LTPA) and may be used to develop or adapt effective interventions for cancer survivors residing in rural and underserved areas. This study used a mixed-methods design to explore multilevel determinants of LTPA in rural breast cancer survivors (BCS).

Methods: Cancer survivors (n=219) were recruited to the Partnering to Prevent and Control Cancer (PPCC) study and completed questionnaires assessing LTPA, self-efficacy, motivational readiness, psychosocial distress, social support [SS], and home and neighborhood environments for LTPA. Logistic regression models were used to explore associations between multilevel determinants and LTPA. BCS who completed questionnaires (n=67) were invited to participate in a semi-structured in-depth interview to better understand determinants of LTPA. Interviews were completed with 38 BCS, and qualitative findings were integrated with quantitative data to summarize individual, social, and environmental determinants of LTPA adoption and maintenance in rural BCS.

Results: Participants were in their 60s (M age=62.0±13.1 years), and most were women (98.5%), had completed college (54.6%), and were >12 weeks post-treatment (93.9%). Nearly half (49.2%) of BCS reported their health as very good/excellent, and 46.2% reported meeting LTPA guidelines. Participants reporting higher exercise self-efficacy (OR=1.1), motivational readiness (OR=4.6), and SS for LTPA from family (OR=1.1) and friends (OR=1.1) and lower perceived stress (OR=0.9) and depressive symptoms (OR=0.9) were more likely to be active (ps<.05). Interviewees discussed individual and social determinants that influenced PA adoption, including their LTPA history, engagement in social activities, and SS. Multilevel barriers for engaging in LTPA included lack of SS and physical and financial resources, a lack of places nearby to do PA, and feeling isolated from people and places.

Conclusions: Findings highlight the multilevel, interactive complexities that influence LTPA in rural BCS and the need for multi-level approaches for increasing LTPA adoption and maintenance in this underserved population.

44

Parental Influence on HPV Vaccination among Latinx Adolescents Receiving Care from a Large Federally Qualified Health Center in Los Angeles County

Cotangco K, Tieu L, du Plessis LD, Herrmann AK, Rosen D, Johnson G, Diaz A, Park C, Bastani R, Glenn BA

Purpose: The purpose of this study was to understand influences on HPV vaccination among low-income adolescents receiving care from a large Federally Qualified Health Center (FQHC) in Los Angeles, California that serves a primarily Latino/a/x population.

Methods: Semi-structured interviews were conducted in Spanish and English among parents of adolescents (11-17 yrs) recruited from an FQHC participating in a pragmatic trial comparing the effectiveness of three HPV vaccine promotion approaches. Interviews assessed vaccine awareness and beliefs, perceived barriers, and provider communication and were audiotaped, translated, and transcribed verbatim. Three coders used template analysis methods to identify a priori and emerging themes, focusing on parents who were aware of the vaccine.

Results: Interviews were conducted with 91 parents and 74 had heard of the HPV vaccine (95% female; 94% Latino/a/x). Among adolescents of HPV vaccine aware parents, only 69% (31/45) of girls and 52% (15/29) of boys had received the vaccine. A number of parents were unaware that the vaccine was recommended or beneficial for boys. Many parents of unvaccinated adolescents felt their child was not currently at risk (not having sex) or that they could reduce their child's risk (provide advice), while parents of vaccinated adolescents acknowledged they may not be aware of their child's risk and could mitigate future risk through vaccination. Parents of vaccinated adolescents often emphasized parental responsibility over their child's health decisions, while some parents of unvaccinated children deferred to their child to make the decision. Parents of unvaccinated adolescents also expressed less trust in health care providers, more concerns about potential vaccine harms, or thought the vaccine was "new." While such barriers also emerged among parents of vaccinated children, they were typically countered by perceived vaccine benefits. Parents did not cite logistical barriers or cost concerns related to the vaccine.

Conclusions: Despite having knowledge of and access to the HPV vaccine, we found differences between parents of vaccinated and unvaccinated Latino/a/x adolescents in perception of their child's risk, vaccine decision-making, and level of trust in their healthcare provider.

45 T

Positioning Virtual Clinicians as a Tool to Reduce Colorectal Cancer Disparities in Rural Communities: The Impact of Identity on Evaluations of Virtual Clinician Appearance

Cooks EJ, Duke K, Flood-Grady E, Vilaro M, Te P, Parker N, Ghosh R, Lok B, George T, Odedina F, Williams M, Modave F, Carek P, Laber E, Krieger J

PURPOSE: Rural patients experience significant disparities in colorectal cancer (CRC) screening. Virtual clinicians (VCs) are uniquely situated to reduce screening disparities, yet how rural identity (RUID) (i.e., how patients identify with rural communities) influences patient experiences with VCs is unknown. To explore

the association between RUID and patient evaluations of VC appearance, we piloted a telehealth intervention for delivering CRC prevention messaging.

METHODS: White and Black adults (N = 2079) who were non-adherent with screening guidelines and between 50-73 years old tested the Meet ALEX (-Agent Leveraging Empathy for eXams) VC intervention. VCs were developed through collaboration with health communication experts, computer scientists, and a diverse group of rural participants. Participants were randomized to one of eight conditions: VC race (Black, White), VC gender (male, female), and intervention type (static, interactive). RUID was assessed using a four-item measure. Perceptions of VC appearance were also measured. Logistic regression models examined participant evaluations of the VCs.

RESULTS: Overall, participants with stronger RUID ($\beta = 0.11$, $p = .02$), specifically place identity ($\beta = 0.09$, $p = .05$), similarity ($\beta = 0.13$, $p = .01$), and self-concept ($\beta = 0.11$, $p = .03$), rated the VC as more attractive regardless of VC race or gender. A sense of belonging to a rural community influenced ratings of VC attractiveness for Black participants ($\beta = .20$, $p = .02$). In addition, Black participants who received screening messages from a Black VC and reported higher self-concept (aligned more strongly with rural communities) rated the VC as more attractive ($\beta = 0.58$, $p = .01$).

CONCLUSIONS: Understanding rural patients' perceptions of VCs for delivering medical care and screening interventions is imperative for reaching and reducing rural cancer disparities. Our findings suggest that adults who strongly identify with rural communities have different perceptions of VCs for delivering screening interventions than those for whom RUID is less important. Investing resources to maximize VC appearance in telehealth interventions is critical to reducing CRC screening disparities in rural communities, particularly when targeting rural Black patients.

46 T

Prevalence and Predictors of Access to Prostate Cancer Screening among New York City Taxi/For-Hire-Vehicle (FHV) Drivers

Leopold KT, Finik J, Wu M, Jingree ML, Meraji NN, Narang B, Gany F

PURPOSE: To enable early detection of prostate cancer, the American Cancer Society (ACS) recommends conducting PSA screening for at-risk populations. However, screening rates are often lower in underrepresented populations. Examining predictors of screening access among the underserved could help to determine needed points of intervention for cancer control programs. Taxi and for-hire vehicle (FHV) drivers, a mainly male, immigrant, and low-income group, with lack of access to healthcare and employer-sponsored health insurance, and with established and postulated prostate cancer risk factors related to age, race/ethnicity, physical inactivity, diet, and obesity, likely face screening inequities.

METHODS: Between 2018-2020, a cross-sectional survey was administered in English, Bengali, French and Spanish to 380 NY taxi/FHV drivers to determine 1) ACS guideline-concordant prostate cancer screening rates and 2) screening predictors using a

multivariate logistic model.

RESULTS: Mean age was 55 years (SD=7). 92.9% were born outside the US; common regions of origin were Sub-Saharan Africa (39.6%), South Asia (16.2%), Latin/South America (15.2%), and the Caribbean (14.9%). Of the 380 drivers, 95.6% were screening-eligible, yet only 20.3% reported ever getting a prostate-specific antigen (PSA) test. Among participants who completed any screening (n=113), most had received a PSA test (52.2%) or both a PSA test and a digital rectal exam (DRE) (15.9%) during their most recent prostate cancer screening. 31.9% received only a DRE. 51.6% (n=196) of all participants had primary care providers (PCPs), while 68.8% of participants who received PSA or PSA and DRE had PCPs. Among participants who received a PSA or a PSA and DRE, participants with a primary care provider were more than twice as likely to have ever completed prostate cancer screening (2.42 OR; 95% CI [1.3, 4.65]; $p < .05$). Other demographic and healthcare factors were not significant predictors.

CONCLUSIONS: There are over 650,000 taxi/FHV drivers across the US. NY screening rates are low among this at-risk group. Targeted interventions should be developed to increase prostate cancer screening among taxi/FHV drivers, to promote equitable prostate cancer outcomes, with a focus on navigating drivers into primary care.

47

Prevalence of Monoclonal Gammopathy of Undetermined Significance (MGUS) in U.S. Black Women

Bertrand KA, Zirpoli G, Pillalamarri BN, Palmer JR, Kataria Y

Purpose of the study: Compared to non-Hispanic whites (NHWs), Black men and women have over a 2-fold higher incidence of multiple myeloma and a higher incidence of its asymptomatic precursor condition, monoclonal gammopathy of undetermined significance (MGUS). A previous study based in the National Health and Nutritional Examination Survey (NHANES; Landgren et al., 2014) estimated the age-adjusted prevalence of MGUS in Black individuals ages 50 and older to be 3.7% (vs. 2.3% in NHWs). We used data from a national cohort of Black women to calculate the prevalence of MGUS in this population.

Methods: We screened archived serum samples collected between 2014-2017 from 1707 randomly selected participants in the Black Women's Health Study (BWHS) ages 50-79 for evidence of MGUS. Women with prior cancers were excluded. All samples underwent serum protein electrophoresis (SPEP) and immunofixation electrophoresis (IFE). Results were interpreted by a single pathologist. MGUS cases were defined as presence of an M protein < 3 g/dL in the serum.

Results: We identified 163 cases of MGUS (crude prevalence, 9.6%). The overall age-adjusted prevalence, with direct standardization to the 2000 U.S. Census age distribution for comparison with prior literature, was 9.0% (95% confidence interval: 7.6%, 10.4%). The prevalence increased with increasing age: estimates were 5.7%, 11.0% and 12.4% among women ages 50-59, 60-69, and 70-79,

respectively. IgG MGUS was observed in 116 cases (71%), IgA MGUS in 34 cases (21%) and IgM MGUS in 10 cases (6%).

Conclusions: These results suggest that previously published estimates of MGUS prevalence in U.S. Black women may be underestimates. Reasons for the higher than expected prevalence are unknown, but could reflect temporal trends: the NHANES data were based on blood samples collected in the early 1990s and early 2000s, whereas samples in the Black Women's Health Study were collected from 2014-2017. Given the incurable nature of multiple myeloma, a better understanding of etiologic factors in MGUS and multiple myeloma development is urgently needed to inform opportunities for risk reduction, particularly in high-risk populations.

48

Racial and Ethnic Differences in 60-Day Hospital Readmissions for Patients with Breast, Colorectal, Lung, and Prostate Cancer

Anyanwu M.C, Enogieru I, Wang F, Vin-Raviv N, Benitez J, and Akinyemiju T

Purpose: This study examines the patient, hospital, and state-level factors contributing to 60-day hospital readmissions among diverse patient groups hospitalized with a primary diagnosis of breast, colorectal, lung, or prostate cancer.

Methods: We analyzed data from the 2016 Nationwide Inpatient Sample (NIS) database. This study included 43,781 adult Black, White, Hispanic, and Asian/Pacific Islander patients discharged alive from the hospital following an index admission with a principal diagnosis of cancer. Multivariable adjusted logistic regression and Generalized Estimating Equation models were used to estimate the observed-to-expected ratio for patient (insurance, income), hospital (hospital type), and state (Medicaid expansion) level factors associated with 60-day hospital readmission following discharge adjusting for demographics and comorbidities.

Results: Compared with White patients, Black patients had higher odds of 60-day hospital readmission for all four types of cancer combined (OR, 1.13; 95% CI, 1.03-1.25), separately for prostate (OR, 1.19; 95% CI, 1.01-1.41) and lung (OR, 1.34; 95% CI, 1.18-1.52). For all cancers combined, higher observed-to-expected (OE) 60-day readmission rate ratio was associated with low vs. high income (OE ratio, 1.06; 95% CI, 1.01-1.12) and Medicaid vs. private insurance (OE ratio: 1.27; 95% CI, 1.18-1.37) for Black patients. Black patients with prostate cancer had a high OE ratio if they were in the highest income (OE ratio 1.37; 95% CI, 1.18-1.58), admitted in urban hospitals with > 300 beds; (OE ratio 1.34; 95% CI, 1.16-1.55), non-Medicaid expansion state (OE ratio 1.26; 95% CI, 1.15 -1.36) and self-pay (OE ratio 2.75; 95% CI, 2.25-3.37). In Lung cancer, Black patients had a high OE ratio if they were low vs. high income (OE ratio: 1.31; 95% CI, 1.19-1.43), admitted to rural vs. urban hospitals (OE ratio 2.30; 95% CI, 1.89-2.79), non-Medicaid expansion state (OE ratio 1.18; 95% CI, 1.07 -1.31) and on Medicaid vs. private insurance (OE 1.38; 95% CI, 1.19-1.60).

Conclusion: Black-White disparities in 60-day hospital readmission rates are driven by multi-level social determinants of health factors. Identifying these associations will help develop strategies to

overcome the barriers limiting access to quality care.

49

Racial and Insurance Type Coverage Differences in Lung Cancer Screening Utilization in a Lung Cancer Screening Program

Hayes RB, Futrel M, Guy M, Sheppard VB, Prom-Wormley EC, Fugate-Laas K, Carter D, Hill J, Xia B, Nana-Sinkam P

Background: Lung cancer is the most common cause of cancer related mortality in the U.S. Early detection through Low Dose CT (LDCT) screening has been shown to curb mortality rates by as much as 20%. Despite the benefits of screening, disparities continue to exist in rates of screening and little is known regarding screening patterns in racial/ethnic, uninsured or underinsured groups. This study examined racial and insurance type coverage differences in LDCT screening utilization within an academic medical based screening program.

Methods: The study used a historical cohort of N=2,324 patients who were referred and/or received a lung CT scan at our institution from January 2017 to June 2021. Data from medical records were extracted and included demographics such as race, age, gender, smoking status, and insurance type (e.g. Private, Medicare, Medicaid, Corrections, etc.). Medical records also captured whether a patient was a) referred, but didn't receive a lung CT, b) received at least one lung CT or c) received repeated lung CT scans. Number of days from order placement to lung CT receipt was also extracted. Analyses were multivariate logistic or linear regression models controlling for the above demographic variables.

Results: Patients were 52.5% male; M-age= 62.7(SD = 5.9); 61.0% White and 57.6% current smokers at the time of their first CT scan. Nearly 14% (n=319) did not complete their ordered CT and 33.6% (n=780) had a repeat CT scan. Blacks compared to Whites were more likely to not receive a scan after referral (18.5% vs. 10.7%; OR = 1.77 [95%CI 1.3-2.3]; and Blacks were also less likely to have repeat scans (36.6% vs. 28.4%; OR = .746 [95%CI .613-.907]. Individuals insured through Medicaid (b=10.0 (SE = 4.54); p=.027) or Corrections' insurance (b=110.6 (SE = 34.4); p=.001) had greater days from order placement to CT scan receipt compared to other insurance types.

Conclusions: Opportunity to further understand these disparities and to propose strategies to increase initial and repeat annual lung CT among Blacks and those from lower socioeconomic status is critical. Future efforts may focus on enhancing implementation strategies that include navigators and outreach staff to address patient barriers to lung cancer screening.

50

Racial/Ethnic Disparities in Cancer Outcomes among People with HIV in the United States: A Systematic Review

Wijayabahu AT, Aduse-Poku L, Ilozumba MN, Nduaguba SO

Purpose: People with HIV (PwH) are at heightened risk for cancer. It is unclear whether racial/ethnic disparities in cancer outcomes among PwH mirror the general population. In this systematic

review, we critically reviewed and summarized racial/ethnic disparities in cancer outcomes among PwH by cancer type.

Methods: A literature search was conducted through PubMed, Web of Science, Cochrane Library, ProQuest Thesis and Dissertations, and EMBASE using MeSH terms for race/ethnicity, cancer, and HIV and limited to studies published between 01/01/1980 and 06/23/2020 in English. Title/abstract, full-text screens, and data extraction were conducted by paired reviewers. Disagreements were resolved by discussion.

Results: Of the 23 eligible studies, 12 (52%), 4 (17%), 5 (22%), and 5 (22%) studies assessed cancer risk, screening, treatment, and mortality among PwH, respectively. Studies on risk assessed human papilloma virus (HPV)-related, Kaposi sarcoma (KS), urogenital, and lung cancers. Compared to White men who have sex with men (MSM), KS risk appeared higher among Black MSM but lower for studies including only MSM with HHV-8 seropositivity. Prostate cancer risk was generally higher among Blacks vs Whites. Studies on screening covered cervical, breast, and colorectal cancers. Disparities in screening were not evident. Studies on treatment covered lymphoma and multiple cancers combined. Blacks were consistently less likely than Whites to receive treatment. Studies on mortality were limited to KS and HPV-related cancers. In general, Blacks had higher KS mortality compared to Whites. Overall, studies were rated poor to fair using the NIH Study Quality Assessment Tools with no study rated good.

Conclusions: Given the wide range of diagnosable groups of cancers, studies investigating racial/ethnic disparities among PwH are extremely limited. The quality of current evidence is also poor. Thus, research with more rigor is warranted to address the gap in knowledge and target interventions to PwH for cancers and outcomes with conclusive evidence of racial/ethnic disparities.

51 T

Racial/Ethnic Disparities in Esophageal and Gastric Cancer Mortality: Surveillance Epidemiology and End Results, 2000-2011

Omofuma OO, Cook MB, Abnet CC, Camargo MC

Purpose of the study: To better understand racial/ethnic disparities in esophageal cancer (EC) and gastric cancer (GC) mortality.

Methods: We utilized data from the Surveillance Epidemiology and End Results (SEER)-18 registries which covers ~27% of the U.S population. SEER*stat case listing sessions identified first primary EC (n=32,406) and GC (n=60,901) cases diagnosed from 2000-2011. Cases were followed up until death or censoring through December 31st, 2016. Cox proportional models estimated hazard ratios for associations between race/ethnicity groups (non-Hispanic (NH)-White, NH-Black, Hispanic, American Indian/Alaska native and Asians) and subgroups (Indian/Pakistani, Chinese, Filipino, Hawaiian, Japanese, Korean, Vietnamese and other Asians/Pacific Islanders [PI]), and mortality risk. Associations were adjusted for age at diagnosis, year of cancer diagnosis, marital status, geographic region, census tract-level socioeconomic status, rurality index, cancer stage, histology, anatomical site (for GC), cancer directed surgery, and insurance status. A p-value of <0.05 was considered statistically significant.

Results: After medians of 10 (EC) and 11 (GC) months of follow-up, 29,074 and 50,143 deaths from all-causes were reported among individuals with EC and GC, respectively. Compared to NH-Whites, the adjusted mortality risk from EC was significantly reduced in Hispanics (5%) and Asians (Chinese [19%] and Indian/Pakistani [35%]). All-cause mortality risk from GC was also significantly reduced in NH-Blacks (4%) and Hispanics (11%), and Asians (Japanese [9%], other Asians/PI [13%], Filipino [19%], Vietnamese [19%], Chinese [20%], Korean [26%] and Indian/Pakistani [36%]). The associations were not significant for the other racial/ethnic groups. Disease specific mortality risk were similar to those observed for all-causes.

Conclusions: Persons with Asian ancestry demonstrated better survival outcomes after EC and GC diagnosis. Racial/ethnic disparities in survival were more apparent in GC and were more pronounced in Indian/Pakistani persons compared to those of other Asian ancestry. These results highlight the need for more research in racial disparities towards achieving health equity in cancer control.

52

Racial/Ethnic Disparities in Health and Life Insurance Denial Due to Cancer among Cancer Survivors

Lent AB, Garrido CO, Baird EH, Viela R, Harris RB

Purpose of the study: This study examined racial/ethnic differences in health and life insurance denial due to cancer among cancer survivors after the passage of the Affordable Care Act (ACA).

Methods: A cross sectional study was conducted using Behavioral Risk Factor Surveillance System data from 2012 through 2020. The dependent variable asked: "Were you ever denied health insurance or life insurance coverage because of your cancer?" Cancer survivors were included if they were diagnosed with cancer after the Affordable Care Act (N=14,815). Descriptive statistics using weighted percentages summarized the results. Logistic regressions provided odds of insurance denial due to cancer across racial/ethnic groups: Non-Hispanic White, Black, and Other/mixed race; and Hispanic. Models adjusted for age, sex, income, and employment status. Interaction terms for age, sex, income, and employment were included in regression models to assess for effect modification.

Results: Weighted chi-squares identified statistically significant differences ($p < 0.05$) between those who were denied or not denied insurance across sex, age, race/ethnicity, income, and employment. Adjusted weighted logistic regressions found significantly higher odds of insurance denial for Blacks (OR:3.01, 95%CI:1.78, 5.08), Other/mixed race (OR:2.10, 95%CI: 1.13, 3.90), and Hispanics (OR:2.16, 95%CI:1.05, 4.46) compared to Non-Hispanic Whites. Sex, income, and employment status were significant effect modifiers. Compared to White women, Black women were significantly more likely to be denied health and life insurance. Compared to Whites with incomes $> \$25K$ to $< \$50K$ and $> \$50K$ to $< \$75K$, Blacks were more likely to be denied insurance (OR:3.50, 95%CI:1.42, 8.66 and OR:7.72, 95%CI: 2.40, 24.81).

Conclusions: Despite health insurance denial for pre-existing

conditions being illegal under the ACA, cancer survivors report racial/ethnic disparities in health and life insurance denial due to their cancer diagnosis. This denial may be particularly harmful for people of color who are already financially vulnerable due to their cancer diagnosis and exacerbate racial/ethnic cancer disparities.

53

Renal Cell Carcinoma Surgical Treatment Disparities in American Indians

Gachupin FC, Leist KS, Figueroa T, Hsu CH, Valencia CI, Batai K

PURPOSE OF THE STUDY: This study investigated renal cell carcinoma (RCC) surgical treatment disparity patterns, specifically for American Indian/Alaska Native (AI/AN) individuals in Arizona, and the potential connection to mortality.

METHODS: Stage I RCC cases diagnosed between 2007 and 2016, from the Arizona Cancer Registry (ACR) with known race/ethnicity, were included in the study. Census tract socioeconomic factors, including high school graduation, poverty, and unemployment rates were linked. Statistical analyses were performed to test the association of race/ethnicity with surgical treatment pattern and overall mortality adjusting for patient's demographic, healthcare access, and socioeconomic factors.

RESULTS: A total of 5,111 patients included from ACR. AI/ANs were the smallest group ($n=319$; 6.2%). AI/ANs were more likely to live in neighborhoods with lower high school graduation, higher unemployment, and higher poverty rates and rural areas. This group also had a higher proportion of single individuals vs. married. AI/ANs were diagnosed 6 years younger than Non-Hispanic Whites. AI/AN patients are more likely to receive no treatment (OR 1.87 95% CI: 1.24-2.82) and more likely to receive radical rather than partial nephrectomy (OR 1.69 95% CI: 1.25-2.27) compared to NHWs. Analysis showed that not undergoing surgical treatment and undergoing radical nephrectomy had statistically significantly associated with higher overall mortality (HR 1.82 95% CI: 1.21-2.76 and HR 1.59 95% CI: 1.30-1.95 respectively). Although statistically not significant after adjusting for neighborhood-level socioeconomic factors and surgical treatment patterns, AI/ANs had elevated risk of mortality.

CONCLUSION: This study illustrates the increased challenges in treatment that AI/AN RCC patients may experience and the treatment disparities that may lead to high mortality compared to other groups. Increased cancer health programs addressing these specific needs and along with health promotion/prevention programs culturally adapted for this group are required to reduce kidney cancer risks and achieve overall health equity across all groups.

54 T

Sociodemographic and Clinical Factors Associated with Radiation Treatment Nonadherence Among Rural and Nonrural Cancer Patients

Morris BB, Fields EC, Sabo RT, Weaver KE, Fuemmeler BF

Purpose. Cancer treatment nonadherence is associated with higher rates of cancer recurrence and decreased survival. Cancer patients living in rural areas experience a 10% higher mortality rate compared with their nonrural counterparts; geographic differences in adherence may contribute to this increased mortality. The goal of this study was to determine sociodemographic and clinical factors associated with radiation treatment nonadherence among cancer patients living in rural and nonrural areas.

Methods. We used cancer registry and hospital billing claims data to measure radiation treatment nonadherence defined as 2+ missed appointments. Geographic residence was defined by USDA 2013 Rural-Urban Continuum Codes. We stratified to examine the effect modification of geographic residence, and used multivariable logistic regression with age, race, sex, insurance, cancer type, clinical stage, and treatment modality as covariates.

Results. We identified 1928 cancer patients that averaged 62 years old, were 56% female, 63% white, 53% treated with external beam radiation, and 15% rural. While the number of missed appointments did not differ between rural and nonrural patients, rural patients attended fewer total appointments ($p=0.007$) and missed a higher percentage of appointment (17% vs. 14%, $p=0.04$). For rural patients, the odds of nonadherence increased by 8% with each additional appointment ($p<0.0001$) and those without health insurance were 3 times more likely to be nonadherent than those with commercial insurance ($p=0.01$). For nonrural patients, the odds of nonadherence increased by 12% with each additional appointment ($p<0.0001$), those with Medicaid were twice as likely to be nonadherent as those with commercial insurance ($p=0.03$), and those with stage 4 disease were twice as likely to be nonadherent as those with stage 1 disease ($p<0.0001$).

Conclusions. In a geographically and racially diverse population, treatment nonadherence is a significant issue with unique factors contributing in rural and nonrural populations. Patient support should be uniquely targeted for rural and nonrural patients without insurance or Medicaid and with advanced cancer stage, and more hypofractionated guideline-concordant treatment options should be considered for these populations.

55 T SPEED-HPV: School-Based Pediatric Clinics to Educate and Enable Delivery of HPV Vaccination

Chebli P, Foster V, Sifuentes S, Yusuf Y, Kazmi A, Trinh-Shevrin C, Kwon SC

Purpose. HPV vaccination rates are higher at Family Health Centers of NYU school-based health centers (SBHCs) in Brooklyn (70%) compared to the rest of the Borough (43%) and NYC (59%). This study examines implementation of HPV vaccination in these SBHCs to identify best practices.

Methods. We conducted interviews with 12 clinical staff from 5 NYU SBHCs. Guided by the Consolidated Framework for Implementation Research (CFIR), we used a deductive content analysis to identify vaccination drivers in SBHCs.

Results. Intervention-level facilitators include having immunization

as a core clinical service, which allows for a smooth integration of HPV vaccination processes; incorporating screening and reminder calls in clinic workflow; and sending parental text reminders. The lack of in-language text messages and materials was cited as a challenge for immigrant parents. Inner setting facilitators include leadership buy-in and support; staff meetings to reinforce vaccination goals and discuss progress; and using electronic health records to track vaccination status. Outer setting facilitators include NYC Department of Health and Mental Hygiene resources, including the Citywide Immunization Registry to track vaccination status and educational materials. The lack of school HPV immunization mandates was viewed as a barrier. Facilitators at the individual-level include a staff champion; self-efficacy to tailor counseling to patients' cultural beliefs; and language and racial/ethnic concordance with patients. Barriers include vaccine hesitancy among staff, which was addressed by ad-hoc staff-led education. Relatedly, interviewees described informal clinic champions as facilitating HPV immunization.

Conclusion. We identified strategies to boost HPV vaccination in SBHCs: 1) immunization process workflows ranging from screening to outreach and delivery; 2) motivated staff and champions with relevant knowledge and self-efficacy; 3) leadership commitment to HPV vaccination. Opportunities for improvement were: 1) having in-language and culturally tailored educational materials and reminders; 2) systematically addressing vaccine hesitancy in staff; 3) periodic check-ins to review progress and improve workflow.

56 The Impact of Marital Status on Tumor Aggressiveness and Treatment among Black and White Men Diagnosed with Prostate Cancer in the North Carolina-Louisiana Prostate Cancer Project (PCaP)

Khan S, Fuzzell L, Lewis-Thames MW, Langston M, Han Y, Moore JX, Sutcliffe S, Bensen JT, Mohler JL, Fontham ETH, Song L

Purpose: To examine the association of marital status with tumor aggressiveness and receipt of definitive treatment in Black and White men from the North Carolina-Louisiana Prostate Cancer Project (PCaP).

Methods: PCaP is a case-only, cross-sectional, population-based study among men diagnosed with incident prostate cancer. Black and White men were enrolled at an equal rate using a randomized recruitment method. Our study population consisted of 2080 men (1010 Black men; 1070 White men) from the PCaP cohort. Marital status at time of diagnosis was determined by self-report. High-aggressive tumors were defined using a composite measure of prostate-specific antigen (PSA), Gleason Score, and stage. Definitive treatment was defined as receipt of either radical prostatectomy or radiation. Multivariable logistic regression, was used to examine the association of marital status with high-aggressive tumors and receipt of definitive treatment. We adjusted for the following potential confounders: age, race, site, PSA or DRE (digital rectal exam) screening history, education, BMI, and tumor aggressiveness (definitive treatment model only).

Results: Black men were less likely to be married than White men (68.1% vs. 83.6%). Overall, not being married (vs. married) was associated with increased odds of high-aggressive tumors (adjusted odds ratio (aOR): 1.56; 95% confidence interval (CI): 1.20, 2.02). In race-stratified analyses, not being married was associated with an increased odds of high-aggressive tumors in Black (aOR: 1.56; 95% CI: 1.14, 2.19) and White men (aOR: 1.59; 95% CI: 1.03, 2.44). Overall, unmarried men were less likely to receive definitive treatment (aOR: 0.68; 95% CI: 0.54, 0.85). In race stratified analyses, unmarried Black men were less likely to receive definitive treatment (aOR: 0.62; 95% CI: 0.47, 0.83), however, no association was observed in White men.

Conclusion: Unmarried Black men are more likely to be diagnosed with high-aggressive tumors and less likely to receive definitive treatment. Lower rates of marriage among Black men could potentially contribute to lower levels of social support and exacerbate disparities. Providing additional support and education to unmarried men with prostate cancer could help reduce prostate cancer disparities.

57

Themes from the Impact of 2020 on Research Productivity in Primarily Underrepresented Minority (URM) Scholars via Survey: The Geographic Management of Cancer Health Disparities Program (GMaP) Response

Fleisher L, Norbeck C

Purpose: A lack of workforce diversity has been identified as a barrier to improving access to quality care for underserved minority groups, as well as advancing research on health disparities. 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) whose seven regions use a multipronged engagement approach to increase recruitment/retention of diverse investigators and to strengthen professional development.

Methods: Recognizing that the stressful events of 2020 (COVID, racial or political unrest, others) impacted our members strongly, a REDCaP survey was designed to assess if and how the events of 2020 impacted current research productivity, applications for future funding, and publication submission. It 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%).

Results: Descriptive statistics were employed for the quantitative data providing frequency responses and have previously been shared. Qualitative analysis provided profound examples of the difficulties researchers have experienced in 2020. A thematic analysis was conducted, developing a code book after an initial review of the data, followed by individual coding and a consensus process. Using the Socio-Ecological model, we categorized these themes of the impact of the pandemic and social unrest on scholarly productivity. E.g., for the individual level, coded themes such as Focus on Teaching Responsibilities; Expanded research; Balancing/pushing out deadlines; Impact on quality and focus of research; Mental Health; and Virtual Meeting Fatigue were identified, coded, and categorized.

56

Conclusions: We wanted to better understand how the GMaP program could support these scholars in this time of crisis. The most highly ranked GMaP support was the continuation of pilot funding, small research support grants (e.g. materials, publications, research supplies) and expert grant review. These data and stories further inform and enhance specific GMaP program offerings, and help us better advocate for our researchers at the institutional and national level.

58

Understanding Geographic and Racial Disparities in Mortality from Four Major Cancers in the State of Georgia: A Spatial Epidemiologic Analysis, 1999 - 2019

Moore JX, Tingen MS, Coughlin SS, O'Meara C, Odhiambo L, Vernon M, Jones S, Petcu R, Johnson R, Islam KM, Nettles D, Albashir G, Cortes J

Purpose of the study: Progress in cancer outcomes in the general population are not equitable among all populations, leaving some, such as rural and non-Hispanic Blacks (NH-Black) behind. We examined geographic and racial variation in cancer mortality in the state of Georgia, and investigated the correlation between the observed spatial differences and county-level characteristics.

Methods: We analyzed data on breast, colorectal, lung, and prostate cancer mortality among adults (aged >18 years) in 159 Georgia counties from years 1999 through 2019. Geospatial methods were applied, and we identified hot spot counties based on cancer mortality rates overall and stratified by non-Hispanic White (NH-White) and NH-Black races. We assessed differences in county-level characteristics between hot spot and non-hot spot counties using Wilcoxon rank-sum test and Spearman correlation and stratified all analyses by race/ethnicity.

Results: Among all adults, 5.0% (8 of 159), 8.2% (13 of 159), 5.0% (8 of 159), and 6.9% (11 of 159) of Georgia counties were estimated hot spots for breast cancer, colorectal, lung, and prostate cancer mortality, respectively. Among NH-Whites, 5.7% (9 of 159), 4.4% (7 of 159), 4.4% (7 of 159) counties, and 5.0% (8 of 159) of counties were identified as hot spots for breast, colorectal, lung, and prostate cancer mortality, respectively. Among NH-Blacks, 5.7% (9 of 159), 3.8% (6 of 159), 7.4% (11 of 159), and 5.7% (9 of 159) counties were identified as hot spots for breast, colorectal, lung, prostate cancer mortality, respectively. Cancer mortality hot spots were heavily concentrated in three major areas: 1) eastern Piedmont to Coastal Plain regions, 2) southwestern rural Georgia area, or 3) northern-most rural Georgia. Overall, hot spot counties generally had higher proportion of NH-Blacks, older adult population, greater poverty, and more rurality.

Conclusions: We observed distinct geographic and racial/ethnic disparities in mortality from breast, colorectal, lung, and prostate cancer in Georgia. Targeted cancer prevention strategies and allocation of health resources are needed in counties with elevated cancer mortality rates, focusing on interventions suitable for NH-Black, low-income, and rural residents.

59 T

Using Photovoice Methodology to Identify Health Behavior Change Intervention Preferences of Breast Cancer Survivors at the United States/Mexico Border

Werts SJ, Vogel R, Enriquez T, Garcia L, Thomson CA, Ingram M

Purpose: Using a community-based participatory approach, we engaged in qualitative exploration of lifestyle behaviors of Mexican-origin breast cancer survivors to characterize knowledge and attitudes towards healthy diet and physical activity behaviors and determine programming preferences for cancer survivors living on the US/Mexico border.

Methods: We conducted a 9-week photovoice project with Mexican-origin breast cancer survivors in Nogales, Sonora. The project was developed via community-academic partnership between Arizona Cancer Prevention and Control Research Network and Mariposa Community Health Center. Photovoice explored survivor viewpoints on lifestyle behaviors and facilitators/barriers to health after cancer through photographs and group discussion. Meeting themes centered on food, activity, and social support and were chosen based on preliminary data.

Results: Six breast cancer survivors participated in photovoice. Sessions began with presentations of participant photographs/narratives and concluded with group discussion of common themes. Participants perceived that cancer survivors need not follow a restrictive diet after treatment. They consider what is healthy for the general population as healthy for them. They emphasized the connection between food and culture and the importance of enjoying meals with others. While they were less concerned with regimented exercise routines to support health, photos revealed that activity was broadly defined to include physical activity as well as other wellness activities such as walking, biking, listening to music, and time with friends/family. They identified activity as a tool to relieve anxiety related to their cancer diagnosis. Participants noted the importance of giving and receiving social support and emphasized altruism to support positive mood and self-confidence during survivorship.

Conclusions: A strong academic-community partnership facilitated engagement of cancer survivors in photovoice. Factors to consider when adapting and implementing a lifestyle behavior change intervention for cancer survivors living along the US/Mexico border include: 1) incorporation of traditional Mexican diet, 2) perception of physical activity, and 3) inclusion of peer and family support/activities.

60

Utilizing Community Health Ambassadors to Extend and Bridge the Gap in Healthcare System Services, Patient Navigation Services, and Resources through Community-Based Partnerships and Collaborations

Ingraham KL, Melvin Barnett L, Aguilera-Funez N, Cooper A, Patierno SR, Moore A.

Study Purpose: The purpose of this initiative is to educate trusted community members to help promote recommended cancer screenings and increase healthcare service access and utilization. African American and LatinX community members are more likely to die from cancer than their White counterparts. Studies have examined the benefits of Community Health Ambassadors (CHAs) to decrease barriers to cancer care and healthcare system resources. Benefits occur when trusted CHAs are given the opportunity to work through their own community and social networks to reach individuals to help increase community member's participation in health screenings which will ultimately have a positive effect on increasing early detection rates and reducing poor outcomes in certain diseases such as cancer.

Methods: Strong data infrastructure and consistent collection practices are essential in program evaluation. Recruitment of CHAs utilized the snow-ball sampling/chain referral method as well as purposive sampling to recruit diverse community members. We administered a registration intake to access cancer health knowledge, demographic makeup of the community that will be served, conducted interviews to evaluate perceived barriers to program implementation and geographic reach for dissemination of cancer service resources, implemented a 4-hour virtual training session with a pre and post-test assessments to 247 CHAs.

Results: Data show increases from a low of 65% to as high as 98% on topics such as cancer awareness and screening guideline knowledge, patient navigation principles, importance of clinical trials participation, building health programs within their respective community-based organizations, and health program evaluation. Participants received ongoing support and technical assistance from certified Patient Navigators and continuing educational opportunities about cancer prevention, screening services, and community resources.

Conclusion: The CHA program increased important cancer-related knowledge of trusted community members from historically underserved populations. Healthcare systems should collaborate and partner with faith and community-based organizations to help decrease cancer disparities and address social drivers of health.

Early Detection & Risk Prediction

61

Awareness, Utilization, and Guideline-Adherence to Breast Cancer Risk Management Behavior Among a Community-Based Sample of High-Risk Women

Meadows RJ, Muraveva A, Bijou C, Shane-Carson K, Balasca C, Wills CE, Yee LD, Paskett ED, Padamsee TJ

Purpose: Clinical guidelines recommend risk-management methods for women with lifetime breast cancer (BC) risk of $\geq 20\%$. Prior research has mainly explored use of these options among white women with pathogenic BRCA variants or already in specialized high-risk care. Using a more inclusive approach, we aimed to assess awareness, utilization, and guideline adherence of BC risk-management methods among a racially diverse, community-based sample. **Methods:** We administered an online survey that included

measures of risk-management behavior, potential correlates, and information necessary to determine lifetime BC risk. Eligible participants were Black and non-Hispanic white women aged 18-75 years with no prior cancer history and lifetime BC risk $\geq 20\%$. Descriptive analyses were used to assess awareness and utilization of mammograms, breast MRIs, prophylactic oophorectomy, prophylactic mastectomy, and chemoprevention, and adherence to National Comprehensive Cancer Network (NCCN) guidelines. Logistic regression was used to assess the associations between BRCA mutation status, race, and health insurance with awareness, utilization, and guideline adherence.

Results: A total of 717 high-risk participants (35% Black) completed the survey; 146 (20%) had pathogenic BRCA mutations. Most women were aware of breast MRI (79%) and mastectomy (84%); only 61% had heard of oophorectomy and 39% of chemoprevention. Utilization of risk-management practices was low: 36% had a mammogram and 28% a breast MRI in the last 12 months. Only 10% had used risk-reducing mastectomy, 13% oophorectomy, and 2% chemoprevention. One-third (32%) were fully adherent to screening guidelines for their risk level; 13% were fully adherent to risk-reduction guidelines for their risk level. White women, women with health insurance, and those with pathogenic BRCA mutations had higher odds of awareness, utilization, and guideline-adherence to most risk-management methods compared to their peers.

Conclusions: Awareness, utilization, and NCCN guideline-adherence of BC risk management were low among a racially diverse, community-based sample of high-risk women. Studies of barriers, facilitators, and development of interventions are needed to decrease disparities and increase appropriate risk-management behavior.

62 T

Ceramides Are Associated with Increased Cancer Risk in the Utah Obesity Cohort Study

Karra P, Krick B*, Poss AM, Haaland B, Kim J, Adams T, Hunt SC, Summers SA, Hardikar S, Playdon MC*

Purpose: Excessive lipid deposition in non-adipose organs like the liver, pancreas or heart contributes to the development of cardiometabolic diseases like diabetes and heart failure. Ceramides are a particularly pathogenic lipid species, as they alter tissue metabolism such as inducing insulin resistance, a mechanism with demonstrated links to cancer risk as well. However, the relationship between circulating ceramides and cancer risk has rarely been evaluated.

Methods: In the Utah Obesity Study, a large prospective cohort of gastric bypass (N= 418) and non-surgical patients with severe obesity (N=737), clinic-demographic factors and metabolic health parameters were measured at baseline, 2-years (post-weight loss in the surgery group), 6 and 12-years. We measured the association of a quantified panel of serum sphingolipids including ceramides as time-varying exposures with cancer incidence using pooled logistic regression analysis with Benjamini-Hochberg False Discovery Rate (FDR) correction for multiple testing, adjusting for age, sex, race, BMI, diabetes and smoking.

Results: Participants were predominantly female (83%), white

(97%), middle-aged (45 ± 9 years), and morbidly obese (BMI 45.9 ± 5 kg/m²; % fat $52 \pm 3\%$). After FDR correction, six ceramides were statistically significantly associated with cancer risk (ceramides: d18.1/16.0 (OR(95% CI) =4.62 (1.51, 14.72), d18.1/24.1 (OR(95% CI) =4.14 (1.47, 12.23); glucosylceramides: d18.1/16.0 (OR(95% CI) =5.57 (2.00, 16.06), d18.1/18.0 (OR(95% CI) =5.28 (1.71, 17.43), d18.1/24.0 (OR(95% CI) =4.51 (1.51, 14.12), d18.1/20.0 (OR(95% CI) =4.64 (1.52, 15.24)).

Conclusions: Multiple ceramide species were prospectively associated with cancer risk in the Utah Obesity Study. More studies in larger cohorts are needed to confirm these associations.

63 T

HPV-Based Screening at Extended Intervals Misses Fewer Cervical Precancers than Cytology: Evidence from the HPV FOR Cervical Cancer (FOCAL) Trial

Gottschlich A, Gondara L, Smith LW, Cook D, Martin R, Stuart G, Lee M, Peacock S, Franco EL, Krajden M, van Niekerk D, Ogilvie G

Purpose: While cervix screening using cytology is generally recommended at 2-3 year intervals, given the increased sensitivity of HPV-based screening to detect precancerous lesions, HPV-based screening is often recommended at 5-year intervals. As organized cervix screening programs begin to transition from cytology to HPV-based screening at extended intervals, there is some concern that cervical cancers will be missed between screens.

Methods: Participants in HPV FOR Cervical Cancer (FOCAL) trial received either cytology (Cyto Arm) at 24-month intervals or HPV-based screening (HPV Arm) at 48-month intervals, and one round of co-testing with both cytology and HPV testing at exit. We investigated the results of the exit co-tests to determine which participants with cervical intraepithelial neoplasia grade 2 or higher (CIN2+) or grade 3 or higher (CIN3+) would not have had their precancer detected if they had only had the primary screen at exit that they received at baseline (henceforth called a "missed detection").

Results: There were 62 and 49 total participants with CIN2+ detection at trial exit in the Cyto Arm and HPV Arm, respectively. In the Cyto Arm, 25 (40.3%) were missed detections (i.e., normal cytology/ positive HPV test) (CIN2 N = 17, CIN3+ N = 8). In the HPV arm, three participants (6.1%) were missed detections (negative HPV test/abnormal cytology) (CIN2 = 2, CIN3+ = 1). One of the three HPV Arm missed detections had low-grade cytology findings and would not have been referred to colposcopy even outside of the trial. In the Cyto Arm, all women had normal cytology 24-months prior to exit and had an average of nearly six screens prior to entry into the study, with over 75% of participants never having an abnormal screen prior to FOCAL. The highest burden of missed detections was in the youngest age group (25-29 at baseline), where there were three missed CIN2s and three missed CIN3+s.

Conclusions: Multiple rounds of cytology missed precancerous lesions that were detected with one round of HPV-based screening. It appears that cytology misses more CIN2+, even at shorter

screening intervals than HPV-based screening. This assuages concerns about missed detection post-implementation of an extended interval HPV-based screening program.

64 T

Impact of the COVID-19 Pandemic on Cancer Screening Delays

Zhang X, Elsaid M, DeGraffinreid C, Paskett E

Purpose of the study: To examine cancer screening delays during the COVID-19 pandemic among Ohio residents.

Methods: Participants from previous studies (N=32,989) with permission to be re-contacted were invited to complete a survey online, by phone, or by mail between June and November 2020. Participants who responded (n=7636) were asked if they planned to have and then if they postponed a planned mammogram, Pap test, HPV test, stool blood test, or colonoscopy. Multivariable logistic regression was used to determine the factors associated with cancer screening delays for each planned test.

Results: The mean age was 59 years, 73% were female, 89% were non-Hispanic White, 56% had a college degree or higher, and 14% had public insurance. Those who planned tests (n=4473, 59%) were younger, more likely to be female, had higher education, had private insurance, and lived in rural areas, vs. those who did not plan. Among those who planned tests, 25% delayed a mammogram (n=807/3274), 27% delayed a Pap test (n=495/1848), 27% delayed an HPV test (n=59/220), 11% delayed a stool blood test (n=45/415), and 36% delayed a colonoscopy (n=323/901). Younger individuals were less likely to delay a mammogram, Pap test, HPV test, or stool blood test (ORs=0.74, 0.89, 0.64, 0.83, respectively; $p<0.05$). Compared to non-Hispanic White women, non-Hispanic Black women were less likely to delay a mammogram (OR=0.63, $p<0.05$); Hispanic women were more likely to delay a mammogram or a Pap test (ORs=1.80 and 2.60; $p<0.05$). Those with some college/college/graduate education were more likely to delay a mammogram (ORs=1.53, 1.47, 1.68, respectively; $p<0.01$); those with some college education were more likely to delay a Pap test (OR=1.63, $p<0.05$); those with a graduate degree were more likely to delay a colonoscopy (OR=2.28, $p<0.05$) vs. those with a high school degree or less. Women with private or public+private insurance were less likely to delay a Pap test vs. women without insurance (ORs=0.36 and 0.44, respectively; $p<0.05$).

Conclusions: Delayed cancer screening may worsen preexisting disparities in cancer care and outcomes. Healthcare providers should address cancer screening delays in those most likely to delay (e.g. Hispanic women), by reminding patients that it is safe to schedule cancer screenings.

65

Perceptions of Multi-Cancer Early Detection in Primary Care: A Scoping Review

Davis K, Hallman MH, DiCarlo M, Wambua S, Jaffe R, Welsh A, Kerber C, Chambers CV, Myers RE

Purpose. New cancer screening modalities are being developed,

including liquid biopsy and multi-cancer early detection (MCED) tests. Research is needed to understand the factors associated with patient and provider receptivity to MCED testing in the primary care setting.

Methods. We conducted a scoping review of the research databases PubMed, Ovid, and Scopus to identify studies of patient and provider perceptions related to liquid biopsy and MCED in cancer screening. We included articles published between January 2000 and June 2021 and used key words such as “multi-cancer screening,” “liquid biopsy,” “multi-cancer early detection,” “MCED,” and “multi-analyte testing.” Two reviewers excluded duplicates and excluded articles that did not focus on the defined topic areas. Differences were adjudicated through discussions involving a third reviewer.

Results. The research team identified 208 articles, excluded 201 that did not address patient and provider perceptions of liquid biopsy and/or MCED testing, and retained 7 for final review. We found that none of the articles reported on provider perceptions of liquid biopsy and/or MCED testing. Among the articles retained for final review, 5 focused on patient perceptions about test use in colorectal cancer screening and 2 reported on patient views related to cancer screening. Patients included in the studies were primarily 50-80 years of age and were at average risk for cancer. Overall, we found that patients were very receptive to blood-based cancer screening. Reasons cited included familiarity with having a blood test, the perceived safety of having a blood test, the lack of a need for preparatory activities prior to testing, and the non-invasiveness of such testing. In one study, patient preference for liquid biopsy or MCED cancer screening was comparable among whites and African American, after controlling for sociodemographic background.

Conclusions. Liquid biopsy and MCED tests are new technologies that are likely to impact cancer screening. Patients' perceptions about this type of testing are favorable. An important area of further research is an assessment of provider perceptions about liquid biopsy and MCED screening and patient receptivity to such testing, compared to other recommended screening modalities.

66

Self-Sampling for Cancer Screening Is Acceptable and Feasible for Providing Early Detection to Underserved, High-Need Patients

Moss JL, Stoltzfus KC, Entenman J, Reiter PL, Onega T, Klesges LM, Ruffin MT

Purpose of the study: To evaluate acceptability and uptake of self-sampled cancer screening tools (cervical: human papillomavirus [HPV] tests; colorectal: fecal immunochemical tests [FIT]) among women in rural, segregated counties in Pennsylvania who were out-of-date with both screenings.

Methods: Nine federally-qualified health centers (FQHCs) mailed invitation letters to potentially-eligible patients. Eligibility criteria included ages 50-65, female sex, and eligible but out-of-date for both cervical and colorectal cancer screening. The study team randomized participants (1:1) to a control arm (i.e., received a reminder letter to schedule in-clinic screenings) or an intervention

arm (i.e., received educational materials and self-sampling tools). Participants in the intervention arm completed and returned the tests to the study lab, and results were communicated back to FQHCs and patients. Participants in both arms completed a baseline survey and a ten-week follow-up survey.

Results: To date, 178 FQHC patients have responded to invitation letters. Of these, 43 (24.2%) were eligible and enrolled (control: 22 participants; intervention: 21 participants). On average, participants were 56 years old (SE=0.7), were predominantly non-Hispanic white (95%), and 66% reported an annual household income below \$50,000. Of 18 participants in the intervention arm who have completed study procedures, 14 (78%) completed self-sampling for both the HPV test and FIT. Acceptability of self-sampled tests was high, with most participants reporting they were confident in completing the test (HPV: 85%; FIT: 100%), and that it was easy to use (HPV: 100%; FIT: 100%). These participants were interested in self-sampling again the next time they need a screening (HPV: 85%; FIT: 100%). Positivity among returned HPV tests (high-risk HPV types) was 21%, and positivity among returned FIT was 29%.

Conclusions: Recruitment is ongoing (estimated completion: December, 2021). Preliminary findings indicate that self-sampling for cervical and colorectal cancer screening is acceptable and feasible. Positive findings on the self-sampled tests were high, suggesting that this population needs access to follow-up services after cancer screening to reduce the burden of cancer.

67 T

Significance of a Shared Decision-Making Consultation on Lung Cancer Screening Efficacy

Hirsch EA, Studts JL

Purpose of the study: To determine whether documentation of a shared decision-making (SDM) consultation is associated with subsequent adherence to annual lung cancer screening (LCS).

Methods: Data was obtained from the Colorado All Payer Claims Dataset (Co-APCD), which contains insurance claims data for the majority of insured lives in Colorado. The extracted dataset included all health claims, procedural codes, and dates of services from 1/1/2012 to 12/31/2018 for individuals with claims for LCS specific low dose CTs (LDCT), using codes S8032 and G0297. Annual adherence was defined as having a second LDCT claim within 15 months of the index LDCT by calculating time between dates of the index LDCT claim and the next subsequent LDCT claim available in the dataset. The analysis was limited to individuals with a complete 15 months of follow-up time available in the CO APCD dataset. Individuals with a SDM claim within 90 days preceding the index LDCT (G0296) were classified as having a documented SDM consultation. Multivariate logistic regression was used to examine the relationship between a SDM consultation claim and annual adherence.

Results: After excluding duplicate LDCT claims, individuals with <15 months of follow-up time, individuals with lung cancer diagnoses, individuals <55 or >79 years of age, out of state residents, and records with missing regression model data, the final analytic dataset consisted of 7,193 records with 2,476 adherent and 4,717 non-adherent individuals. The 15-month adherence was 34% and 423 individuals (5.9%) had a SDM claim within 90 days of

the index LDCT. After adjustment for sex, age, insurance type, residence (urban/ rural), Charlson Comorbidity Index score, and outpatient healthcare usage over a 5-year period, individuals with a SDM consultation claim had 1.25 (95% CI: 1.01, 1.54) times the odds of being adherent to annual LCS than those without SDM documentation.

Conclusions: This analysis shows that documentation of a SDM consultation from claims data is associated with individuals being more likely to be adherent to annual LCS. While the content and adequacy of the SDM conversation cannot be accessed from the CO APCD, any increase in adherence helps optimize the individual and population health benefits of LCS.

68

The Role of Primary Care Providers in Breast Cancer Risk Assessment and MRI Referral: A Mixed-Methods Study

Conley CC, Song J, Rodriguez J, Ginocchi A, Anderson A, Crane E, Mishori R, O'Neill SC

Purpose: Supplemental screening breast MRI is recommended for women with ≥20% lifetime risk of breast cancer (BC). Multiple factors affecting healthcare providers can be a barrier in recommending screening breast MRI to eligible patients. We assessed practice patterns related to breast cancer risk assessment and referral for screening breast MRI among primary care providers (PCPs).

Methods: Physicians (MDs and DOs) and nurse practitioners specializing in family medicine, internal medicine, or OB/GYN were recruited through professional organizations. PCPs (N=49) completed an online survey assessing attitudes and behaviors related to BC risk assessment and screening. A subset (n=8, 16%) also completed in-depth individual interviews.

Results: To evaluate BC risk, PCPs most often assessed family history (92%) and abnormal mammograms/biopsies (84%). Only 10% reported using mathematical models (e.g., Gail Model, IBIS) that would provide specific BC risk estimates to inform use of MRI. Most PCPs would recommend screening with breast MRI for BRCA1/2 carriers (59%), but fewer (45%) would recommend it for high-risk women without a BRCA1/2 mutation. PCPs based their recommendations on guidelines from ACS (33%), their own institution (16%), or USPSTF (12%). Qualitative analyses identified several themes related to the difficulty of implementing precision BC screening guidelines. Themes were broadly categorized into three categories reflecting the care continuum: (1) identifying high-risk women (e.g., lack of formal systems for risk assessment, scope of practice issues); (2) referral for screening (e.g., conflicting guidelines/recommendations, medico-legal implications); and (3) logistical barriers to getting screening (e.g., scheduling/time, transportation, cost). PCPs suggested that technology (including EMR-based tools) could be used to help overcome some of the barriers identified.

Conclusions: PCPs regularly assess elements of BC risk in their clinical practice, but reported limited use of BC risk models. They also reported moderate willingness to refer patients for breast MRI and identified many barriers in this process. Thus, interventions that educate and support PCPs may be needed to increase utilization of breast MRI among high-risk women.

Lifestyles Behavior, Energy Balance, & Chermoprevention

69 T

Alcohol, Smoking, and Risk of Colorectal Cancer Recurrence and All-Cause Mortality: Results from the ColoCare Study

Loroña NC, Hardikar S, Ose J, Peoples AR, Ulrich CM, Ashworth A, Figueiredo JC, Gigic B, Toriola AT, Li CI

Purpose: We sought to assess the association of pre-diagnostic alcohol consumption and smoking history with colorectal cancer (CRC) mortality and recurrence, using a large, prospective cohort of CRC patients.

Methods: We included men and women diagnosed with a new primary invasive CRC diagnosed 2007-2021 from the ColoCare Study, an ongoing multi-center prospective cohort study with six sites in the United States. We analyzed smoking history (never/ever), smoking recency (never/former/current), and current alcohol consumption (no/yes) at diagnosis. Primary outcomes included CRC recurrence and death from any cause. Multiple imputation by chained equations was used to impute missing values for covariates. Cox proportional hazards models were fit on imputed datasets, with estimates pooled using Rubin's rules. Participants with a history of alcohol abuse (n=24), unknown stage (n=386), or missing time to event or censoring were excluded from all analyses (recurrence n=535; mortality n=16). Participants with stage IV cancer (n=425) or a recurrence within 3 months from diagnosis (n=80) were excluded from recurrence analyses. All models were adjusted for sex, stage at diagnosis, race (white, non-white), ethnicity (non-Hispanic, Hispanic), history of diabetes, history of high cholesterol, history of hypertension, and body mass index, with mutual adjustment for alcohol and smoking history. Effect modification by sex, tumor site, tumor side, and age at diagnosis was explored.

Results: The median follow-up time for 2,219 CRC patients was two years for recurrence analyses and 2.38 years for all-cause mortality analyses. There were 235 recurrences and 467 deaths over follow-up. We observed no associations between current alcohol consumption, smoking history, or recency of smoking at diagnosis and CRC recurrence or all-cause mortality, respectively. No evidence of effect modification was observed.

Conclusion: In this prospective cohort, we found no evidence of an association between pre-diagnostic alcohol consumption or smoking and risk of CRC recurrence or all-cause mortality. This adds to the literature on the effects of these modifiable factors and CRC outcomes and supports the prioritization of research on other behavioral interventions to improve CRC outcomes.

70 T

Associations of Physical Activity and BMI with Survival and Recurrence in Stage I-III Colorectal Cancer Patients: Results from the ColoCare Study

Himbert C, Ose J, Santuci K, Gigic B, Peoples AR, Figueiredo JC, Toriola AT, Siegel EM, Li CI, Shibata D, Boucher K, Round JL, Schneider M, Huang LC, Hardikar S, Ulrich CM

Purpose of the study: While physical activity and BMI have been studied individually in the context of cancer survivorship, it remains unknown whether physical activity can mitigate the impact of BMI on colorectal cancer survival. The objective of this study is to investigate joint associations and changes of physical activity and BMI during the first year after diagnosis on colorectal cancer survival and recurrence.

Methods: N=938 stage I-III colorectal cancer patients were recruited into the international, multi-center ColoCare Study. Recreational physical activity levels at baseline (pre-surgery) and 12 months post-surgery were assessed using an adapted version of the IPAQ questionnaire and computed into metabolic equivalent per task hours/week (MET hrs/wk). Patients were classified into inactive (<8.75 MET hrs/wk) and active (≥8.75 MET hrs/wk). BMI (kg/m²) at baseline and 12 months post-surgery was categorized into normal weight (BMI: ≥18 and <25 kg/m²), overweight (BMI: ≥25 and <30 kg/m²), and obese (BMI: ≥30 kg/m²). Patients were further grouped into joint physical activity and BMI groups. Cox proportional hazard models were used to evaluate associations of physical activity and BMI groups, as well as changes in physical activity and BMI from baseline to 12 months post-surgery with overall and recurrence-free survival. Models were adjusted for age, sex, race, stage at diagnosis, and adjuvant treatment.

Results: The study population was primarily male (56%) and 13% were non-White participants. A significant proportion was diagnosed with stage III disease (49%) and colon cancer (52%) and classified as overweight or obese/inactive (40%). Overweight/active [HR: 2.28 (95% CI: 1.10-4.87), p=0.03], overweight/inactive [2.04 (1.00-4.31), p=0.06], and obese/inactive [2.20 (1.10-4.60), p=0.04] patients had an increased risk of dying as compared to normal weight/active patients. Each 1 MET hrs/wk increased change from baseline to 12 months post-surgery was associated with a 3% decreased risk in recurrence (p=0.001).

Conclusions: Our results support the importance of promoting physical activity guidelines during the first year after diagnosis in colorectal cancer patients. It warrants further investigation of the obesity paradox in colorectal cancer survivorship.

71 T

Change in Fruit/Vegetable Intake and Physical Activity Not Mediated by Patient-Reported Quality of Life among Latina Breast Cancer Survivors in a Diet and Physical Activity Intervention

Huang Y, Marin-Chollom AM, Rillamas-Sun E, Shen H, Contento I, Koch P, Hershman D, Greenlee H

Purpose: To evaluate whether patient-reported quality of life (QoL) domains mediated the effect of a diet and physical activity (PA) intervention on fruit/vegetable (F/V) intake, PA, body mass index (BMI), and waist circumference (WC) among Latina breast cancer (BC) survivors.

Methods: Mi Vida Saludable was a 2x2 factorial randomized controlled trial testing the effects of an in-person and/or eHealth communication diet and PA intervention among Latina BC survivors (n=167). We previously reported that women receiving in-person

sessions improved in F/V intake, minutes/week of moderate PA, BMI, and WC compared to controls, and controls had higher minutes/week of moderate PA minutes than women receiving eHealth. QoL domains were defined using PROMIS-43, which measures the ability to participate in social roles/activities, anxiety, depression, fatigue, pain intensity, pain interference, physical function, and sleep disturbance. Targeted F/V intake, PA, BMI, WC and PROMIS-43 were assessed at baseline and 12 months. Analysis of covariance assessed intervention effects on PROMIS-43 domains and individual items of each domain at 12 months. All domains and items statistically significant at $\sqrt{e} \pm 0.10$ were retained as potential mediators. The bootstrap method was used to assess whether the identified domains and items mediated changes in main outcomes at 12 months.

Results: After 12 months, compared to controls, women who attended the in-person sessions had less sleep disturbance and pain intensity (domains), and less pain interference in ability to participate in social activities, overwhelming worries, and feelings of depression (items). Compared to controls, decrease in pain intensity (domain) was identified as a potential mediator for women in the eHealth arm. However, none of these QoL measures mediated the effect of the intervention on the main study outcomes.

Conclusions: In this exploratory analysis, changes in QoL did not mediate the effect of in-person sessions or eHealth communications on change in targeted F/V intake, moderate PA, BMI and WC among Latina BC survivors. Mediation analysis in intervention studies can improve our knowledge about mechanisms for behavior change. Future studies to identify other potential mediators are needed.

72 T

Dietary Patterns and Clinical Characteristics of BEWELL Study Participants: A Cohort at High-Risk for Lung Cancer (NCT04267874)

Bittoni MA, Tabung F, Bibi A, Wheeler C, Williams N, Heitman K, Mendelson M, Grainger E, Vodovotz Y, Riedl K, Carbone DP, Clinton SK, Spakowicz D

Background: The BEWELL Study is a randomized, cross-over trial examining feasibility and impact of a novel black raspberry (BRB) nectar on microbiome and immune function in a high-risk cohort for lung cancer. This report describes demographic characteristics, compliance, toxicity, and diet/exercise patterns in this cohort.

Methods: Eligible individuals aged 55-77 with 30+ pack-year smoking histories were recruited from the OSU Lung Cancer Clinic and social media. Participants consumed BRB nectar (berries-to-powder converted to nectar by OSU Food Science Dept) and a texture/taste-matched placebo during two 4-week periods with a 2-week washout. Participants completed medical history, food frequency, BRB compliance, and physical activity (IPAQ) surveys. Blood/urine/stool specimens were also submitted.

Results: Of 337 individuals contacted, 96 consented, 62 initiated the study and 33 completed the 10-week study. Of these, 73% were former smokers (24/33), with mean age of 65 years (range 58-76 years). Overall adherence (% nectar/placebo consumed) was

97%. Mean BMI was 29.7 and 57% had 'minimally active' IPAQ scores. The mean Healthy Eating Index (HEI-2015) score was 59 (range=39-74). Females exhibited significantly higher HEI scores than males (63 and 55, respectively; $t=2.83$, $p<0.01$), with significantly higher fruit consumption ($t=2.70$, $p=0.012$). The empirical dietary inflammatory pattern (EDIP; mean=1.6, range=-1.6-2.7), which assesses the inflammatory potential of the diet showed significantly lower inflammatory diets for females vs males ($t=-2.30$; $p=0.03$). No significant differences were found for diet quality indices by smoking status, BMI or age.

Conclusions: Participants showed high compliance and low toxicity to the BRB intervention, confirming the feasibility of conducting this intervention in a high-risk smoking population. They were mostly overweight, had unhealthy diets and low activity levels (compared to national estimates). The mean HEI was similar to the national average, however, with females exhibiting significantly healthier and less inflammatory dietary patterns, and higher fruit consumption, which has also been reported nationally. Next steps will be to assess potential associations of these results with plasma cytokine and microbiome data.

73 T

Does Polygenic Risk Score Modify the Association Between Frequent Aspirin Use and Ovarian Cancer Risk? An Analysis Within the Ovarian Cancer Association Consortium (OCAC)

Hurwitz LM, Webb PM, Jordan SJ, Doherty JA, Harris HR, Goodman MT, Modugno F, Schildkraut JM, Anton-Culver H, Menon U, Wu AH, Pharaoh PDP, Trabert B

Purpose: Frequent aspirin use is associated with reduced epithelial ovarian cancer risk, but it is unknown whether genetic factors modify this association. To inform potential strategies for precision prevention, we examined whether the association between frequent aspirin use and ovarian cancer risk is modified by an ovarian cancer polygenic risk score in the Ovarian Cancer Association Consortium (OCAC).

Methods: We pooled data from OCAC case-control studies with data on frequent aspirin use (≥ 6 days per week). Unconditional logistic regression was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) for associations between frequent aspirin use and ovarian cancer, adjusted for age, number of full-term births, oral contraception use duration, menopausal hormone therapy use duration, body mass index, and study. Analyses were stratified by quartile of the polygenic risk score, which was previously developed within OCAC, and the likelihood ratio test was used to test for interaction. Polytomous logistic regression was used to explore associations by ovarian cancer histotype.

Results: There were 4,738 epithelial ovarian cancer cases and 6,694 controls from eight studies included in this analysis. Though frequent aspirin use was associated with reduced ovarian cancer risk overall (OR: 0.87, 95% CI: 0.77-0.98), the polygenic risk score appeared to modify this association (p -interaction=0.03). Specifically, there was no association among women in the first (OR: 1.04, 95% CI: 0.68-1.58) or second (OR: 1.10, 95% CI: 0.81-1.49) quartile of the polygenic risk score, a protective association among women in the third quartile (OR: 0.69, 95% CI: 0.54-0.89), and no association

among women in the highest quartile (OR: 0.93, 95% CI: 0.77-1.13). No differences in these patterns were observed by ovarian cancer histotype (p-heterogeneity=0.51).

Conclusions: This study suggests that genetic susceptibility to ovarian cancer may modify the association between frequent aspirin use and ovarian cancer risk, with a protective association seen only among women at increased genetic risk. Any use of aspirin for ovarian cancer chemoprevention may be unlikely to benefit women at below-average genetic risk of ovarian cancer.

74 T

Effect of 10-hours Time Restricted Diet on Breast Cancer Risk in Pre and Postmenopausal Women with Overweight or Obesity: TRED Pilot Study

Faiza Kalam, Rand T Akasheh, Christine Jovanovic, Angela F Pfammatter, Sekhar Reddy, Seema Khan, Bonnie Spring

Background: Time Restricted Diet (TRED) is a form of intermittent fasting. Despite the absence of intentional caloric restriction, it may have health benefits similar to caloric restriction. Recent studies demonstrate that participants lose 3-5% of body weight after 6 months of TRED. While these preliminary findings are promising, each of these previous trials implemented an eating window of 6-8 hours a day. However, some people might find it hard to adhere to a short eating window. Whether extending the eating window to 10 hours would enhance adherence and provide similar improvements in metabolic markers associated with breast cancer risk among pre and postmenopausal women is yet to be explored. Objective: This study examined the effect of 10-h time restricted diet on breast cancer risk, assessing changes in body weight, insulin, IGF-1 and IGF binding protein 1, 2, and 3 among pre and postmenopausal women with overweight and obesity.

Method: Women with overweight or obesity (n = 25) were enrolled into a time-restricted diet for 6 months. Participants were instructed to eat only from 10am until 8pm and to record consumption on the TRED smartphone app. At weeks 1, 2, 12, and 24, participants were asked to complete food diaries. During the other weeks participants simply recorded the category of food consumed (meal or snack). Compliance was calculated as percentage of days when food consumption was reported.

Results: 25 women with a BMI between 25 and 40 (32.3 ± 4.2) and age between 18-65 years old (46.5 ± 11.0) were enrolled. Average weight loss was 0.8 ± 4.6 kg (-0.6 %). Fat percentage, muscle mass remained unchanged. Insulin and IGFBP 2 significantly increased from baseline to post intervention and to follow up. However, the change is not clinically significant. IGF-1 and IGFBP1 significantly decreased from baseline to follow up. Average adherence to the diet protocol was high: 78% of participants recorded dietary intake on at least 77 % of intervention days.

Conclusion: The TRED 10-hour eating window did not lead to weight loss, body fat loss, or decreasing waist circumference among pre and postmenopausal women with overweight or obesity. However, the intervention significantly improved some biomarkers of breast cancer risk (IGF-1, IGFBP 2 and IGFBP 3).

75 T

Effects of Metformin on Breast Density and Anthropometric Measures in a Phase II Clinical Trial in Premenopausal Women with Components of Metabolic Syndrome

Tapia EO, Villa-Guillen DE, Pinto L, Centuori SM, Roe D, Huang C, Galons JP, Thomson C, Altbach M, Cordova C, and Chow S

Background: Breast density and obesity are risk factors for breast cancer development. Women with high breast density have a 4-6 fold increased risk of breast cancer development compared to women with low breast density. Tumors that arise from dense breasts also have a worse prognosis. Moreover, obesity increases post-menopausal breast cancer risk and may increase the risk for triple-negative breast cancer in premenopausal women. There is a need for intervention strategies aiming to reduce breast density and obesity-associated dysregulation to attenuate breast cancer risk.

Methods: We conducted a Phase II double-blind, randomized, placebo-controlled trial of metformin in overweight/obese premenopausal women with components of metabolic syndrome to assess the potential of metformin for primary breast cancer prevention. Eligible participants were randomized to receive metformin (850 mg BID, n = 76) or placebo (n = 75) for 12 months. Outcomes included breast density, assessed by fat/water MRI with change in percent breast density as the primary endpoint, anthropometric measures, assessment of compliance to the study agent, and differences by ethnicity.

Results: We analyzed breast density measurements at the baseline visit by ethnicity and identified a significant difference in the dense volume, with Hispanics having a lower dense volume compared to Non-Hispanics (p= 0.044). No differences were found in the non-dense volume or percent density after evaluating differences by ethnicity. After the intervention, metformin treatment led to a significant reduction in waist circumference (p<0.001) and waist-to-hip ratio (p=0.019) compared to the placebo arm. Compared to placebo, metformin did not change percent breast density and dense breast volume but led to a numerical but not significant decrease in non-dense breast volume (p=0.070).

Conclusions: We conclude that metformin intervention resulted in favorable changes in anthropometric measures of adiposity including waist circumference, waist-to-hip ratio, and a significant decrease in non-dense breast volume in women within the metformin group. Future studies will examine transcriptional changes in pathways associated with breast cancer risk in breast tissue collected throughout the study.

76 T

Maternal Occupational Physical Activity and Risk of Cancer Among Offspring in Denmark 1968-2016

Huang X, Hansen J, Olsen J, Ritz B, Heck JE

Purpose: To our knowledge, no published studies have reported the effects of maternal occupational physical activity (OPA) during

pregnancy on childhood cancer risks. Studies on job titles have indicated that maternal occupations that primarily require standing, walking or dynamic movement are related to a higher risk for specific childhood cancer. In addition, pregnancy OPA has adverse impacts on pregnancy outcomes. Here, we investigate the associations between maternal OPA during pregnancy and childhood cancer risk among offspring using registries in Denmark.

Methods: We included all cancer cases born in Denmark between 1968 and 2013, aged 0-19 at diagnosis, and diagnosed between 1968 and 2016 (N= 7,077). Controls, randomly selected from the Central Population Registry, were individually matched by birth year and sex (ratio 1:25). This nested case-control data set has been linked to nationwide registries based on their unique Central Person Registry number to collect maternal employment history during pregnancy and covariate information. Maternal OPA was assessed by a Job exposure matrix based on the Nordic Occupational Cancer Study (Score: heavy or rather heavy physical work versus less heavy). Mothers who were not employed during pregnancy and/or later were excluded. Unconditional logistic regression adjusted for potential confounders was used to estimate potential effects.

Results: High levels of maternal OPA during pregnancy were associated with a higher risk of medulloblastoma (adjusted OR 1.85, 95% CI 1.28-2.66) for all birth years and a higher risk of acute lymphoblastic leukemia (ALL) (adjusted OR 1.21, 95% CI 1.00-1.47) and acute myeloid leukemia (AML) (adjusted OR 1.65, 95% CI 1.12-2.44) in births after the year 1977.

Conclusions: High levels of maternal OPA in Denmark appear to be associated with an increased risk of ALL, AML and medulloblastoma in the offspring. If associations are corroborated, regulations that aim to protect pregnant women from being exposed to high levels of physical activity at work should be considered.

77

Multilevel Determinants of Tobacco Dependence Treatment Program Implementation in NCI-Designated Cancer Centers in the Cancer Center Cessation Initiative

Bird JE, Hohl SD, Ngyuen C, Pauk D, Minion M, Adsit RT, Burris J, D'Angelo H, Fiore M, Minion M, Nolan MB, Ostroff JS, Rolland B

Purpose: Providing tobacco dependence treatment to cancer patients who smoke improves tobacco and cancer outcomes, but treatment is not consistently offered. Here, we examine determinants of tobacco dependence treatment implementation across NCI-Designated cancer centers in the Cancer Center Cessation Initiative (C3I).

Methods: We conducted a mixed-methods study of survey data and semi-structured interviews conducted among Program Leads from 20 C3I-funded cancer centers. We calculated descriptive statistics of survey data and applied directed content analysis to interview transcripts. We organized coded data into constructs representing the Consolidated Framework for Implementation Research. We then grouped centers based on survey data of intervention, inner, and outer setting characteristics (e.g., treatment components offered,

length of time since program initiation, patient smoking rate) to identify determinants of implementation.

Results: The most offered tobacco treatment interventions were in-person (85% of centers) and telephone (70%) counseling and pharmacotherapy (80%). Over half (53%) had been implementing their program for over two years. Smoking prevalence rates across centers ranged from 4% to 47%. Most cited barriers to implementation included inner setting challenges related to leadership and provider buy-in, program compatibility with workflows and IT systems, need for physical space and limited staff dedicated to providing treatment. Facilitators to implementation included outer setting characteristics (e.g., insurance coverage for tobacco treatment services) and process characteristics, including presence of a program champion and support from external change agents such as NCI.

Conclusions: Obtaining leadership and staff buy-in, allocating resources to support IT and workflow integration, and hiring and retaining tobacco treatment specialists were key determinants of successful implementation across C3I centers. These multilevel factors that influenced implementation across a diverse set of NCI-Designated Cancer Centers in C3I can guide NCI, other cancer centers, and community oncology practices in successful implementation of tobacco dependence treatment programs and enhance patient outcomes.

78

Proton Pump Inhibitor Use and Obesity-Associated Cancers in the Women's Health Initiative

Ballinger TJ, Djuric Z, Sardesai S, Hovey K, Andrews C, Braskey TM, Rohan TE, Saquib N, Shadyab AH, Simon M, Wactawski-Wende J, Wallace R, Kato I

Purpose: Proton pump inhibitors (PPIs) inhibit fatty acid synthase (FAS), a critical enzyme in lipogenesis, energy balance, and cancer cell survival. We aimed to evaluate the association of PPI use with incidence of common obesity-related cancers in women: postmenopausal breast, colorectal, and endometrial cancers.

Methods: Our study included 124,931 postmenopausal who were enrolled in the Women's Health Initiative (WHI) observational study and clinical trials, and had responded to a year 3 follow-up assessment. We examined prescription and over the counter use of PPI and/or histamine 2 receptor antagonists (H2RA) at baseline and year 3, to isolate potential effects of FAS inhibition by PPI rather than simply acid suppression. Incident cancer cases were physician-adjudicated. Cox proportional hazard regression models were used to estimate multivariable hazard ratios (HR) and 95% confidence intervals (CI) for associations between PPI and/or H2RA use and cancer incidence after year 3.

Results: There were 7956 PPI ever users (with or without H2RA use) and 9398 H2RA only users. PPI or H2RA use was not associated with risk of breast cancer (n=9186 cases), compared to women who did not use either agent (HR 1.01, 95% CI 0.93-1.10 and HR 0.95 95% CI 0.87-1.03, respectively). The incidence of colorectal cancer (n=2280) was significantly lower in PPI users (HR 0.75, 95% CI 0.61-0.92), but not in H2RA users (HR 1.13, 95% CI 0.97-1.31).

This association was strengthened with increasing duration ($p=0.006$) and potency ($p=0.005$) of PPI use and held regardless of BMI or NSAID use. PPI or H2RA use was not associated with endometrial cancer ($n=1231$) (HR 0.81, 95% CI 0.61-1.07 and HR 1.13, 95% CI 0.91-1.40, respectively), but showed a trend in decreased risk with increasing PPI potency ($P=0.048$).

Conclusions: Among postmenopausal women, PPI use, but not H2RA use, demonstrated an inverse, dose-responsive association with colorectal cancer incidence. This was consistent with preclinical data that FAS inhibition prevents colon cancer progression and supports further investigation of this commonly used medication as a cancer preventive agent. PPI use was not associated with incidence of breast or endometrial cancer.

79 T

Racial Differences in Weight Perception among Black and White Breast Cancer Patients

Edmonds MC, Bickell NA, Gallagher E, LeRoith D, Lin JJ.

Purpose: Black women are more likely than White women to be obese, and obesity is associated with worse breast cancer prognosis. Weight perception, however, has not been studied as a potential mediator of racial disparities in women with breast cancer. In this study we sought to describe racial differences and the association of lifestyle factors with weight perception.

Methods: In this cross-sectional study design, Black and White women with a new primary breast cancer were surveyed about socio-demographics, weight perception, diet, and exercise habits. Height and weight were measured at enrollment. We classified women with a BMI ≥ 25 or waist circumference >88 cm who reported that they were “about the right weight” as under-perceivers. Chi-square (or Fisher’s exact) tests were used to assess factors associated with under-perception of weight. Logistic regression models were fit to evaluate for racial differences in under-perception while controlling for other covariates.

Results: Of 1,197 women with newly diagnosed breast cancer, the average age was 58 years, and 909 (75%) were White. 918 (76%) had stage I cancer, 1,035 (87%) had estrogen receptor positive cancer, and 795 (66%) were privately insured at time of diagnosis. 789 (65%) women had abdominal obesity (waist circumference >88 cm), while 366 (30%) women had a BMI >25 . Overall, 24% of women were under-perceivers. Black women were more likely to be obese (51% vs. 23%, $p<0.0001$), have lower physical activity (13% vs. 5%, $p<0.0001$), and were more likely to be under-perceivers (23% vs. 14% $p<0.0001$). After controlling for, age, education, and stage, Black women remained more likely to under-perceive their weight compared to Whites for BMI >25 (OR:2.4; 95% CI: 1.3-4.3) and waist circumference >88 (OR:3.09; 95% CI:1.9-4.9). Additionally, when women met physical activity guidelines, their likelihood of under-perception of weight was lower compared to those who did not meet physical activity guidelines with BMI >25 (OR:0.3;95%CI: 0.2-0.6), regardless of race.

Conclusions: We found racial differences in weight perceptions among newly diagnosed breast cancer patients. Since obesity is associated with worse breast cancer outcomes, weight under-perception may be an optimal modifiable factor to intervene upon.

80

Rice Bran and Navy Bean Intake Alters the Amino Acid Profile and Healthy Eating Index of Adults at Risk for Colon Cancer

Baxter BA, Beale M, Leach H & Ryan EP

Purpose of the Study: Beans/Bran Enriching Nutritional Eating For Intestinal health & Cancer Including Activity for Longevity (BENEFICIAL) is a pilot trial to examine whether increased fiber intake with rice bran and navy beans or a fiber control supplement, while accounting for physical activity levels, results in changes to host metabolism in adults at high risk for colorectal cancer.

Methods: Twenty adults with colonic polyps removed in the last 3 years and diagnosed with stage 0-1 colon cancer were enrolled and randomized according to body mass index and sex. Participants were allocated to placebo (fibersol-2 (10 g) per day) or intervention (rice bran 30g + navy bean 30g) for 3-months. Fiber intake was measured through study foods and using Nutritionist Pro via the analysis of 3-day food records. The ASA 24 nutritional composition database was used to generate healthy eating index (HEI) and food group composite scores. Non-targeted metabolomics was performed on blood, urine, and stool to identify dietary biomarkers of rice bran/navy beans, and to measure impacts on host and gut metabolic pathways of importance to reducing colonic inflammation and cancer risk. Physical activity was measured using ActivePal accelerometers. All participants received a physical activity education session aligned with the American Cancer Society.

Results: Increased daily fiber intake through consumption of study foods and powders for all participants was associated with improved HEI scores. Participants consuming rice bran/navy bean intervention showed increased plasma concentrations in piperolate at 6 weeks 2.00-fold and 12 weeks 4.15-fold and 4-methoxyphenol sulfate 14.48-fold at 6 weeks and 3.07-fold at 12 weeks when compared to control. Urine amino acid metabolite profiles revealed N-methylleucine 12.55-fold and 24.29-fold, and S-methylcysteine 3.33-fold increase at 12 weeks.

Conclusion: This study demonstrated changes to amino acid metabolic pathways and are affordable means of adhering to national guidelines for prevention in a high-risk population.

81 T

Telehealth Exercise among Older Cancer Survivors: Who Is Participating and How Much?

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

Older cancer survivors commonly experience debilitating combined effects of cancer treatment and aging that can be attenuated through regular participation in exercise; yet, less than 40% of older cancer survivors meet current exercise guidelines. Currently, little is known regarding older survivors’ participation in telehealth exercise. **Purpose:** To describe older cancer survivors that participated in a hospital-based telehealth exercise oncology program. **Methods:** Data of older cancer survivors (70+ years) who participated in a hospital-based exercise oncology program between March 2020 to August 2021 were retrieved from medical records. Descriptive

statistics are presented as means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Descriptive data analysis was conducted in SPSS v26.0. Results: Older cancer survivors (n=111) were 75.7±5.5 years old (range: 70-98 years). The majority of older survivors were white (94.6%), non-Hispanic (94.6%), and female (50.5%). The most common cancer types (n=25) were prostate (n=30; 27.0%), breast (n=23; 20.7%), and multiple myeloma (n=10; 9.0%), respectively. All cancer stages were represented among the 96 survivors with a history of one cancer type (stage

82 T

The Association Between Marijuana Smoking and Breast Cancer Risk

Diaz-Santana MV, White AJ, O'Brien KM, Sandler DP & Weinberg CR

Purpose: Marijuana is a commonly used substance in the United States. Smoking marijuana may plausibly contribute to cancer risk in part due to shared properties with tobacco smoke. Laboratory evidence suggests it may also inhibit proliferation of estrogen receptor (ER) positive breast cancer cell lines by inhibiting DNA synthesis and promoting apoptosis. The association between marijuana use and breast cancer risk has not been well studied. Our objective was to examine the association between smoking marijuana and incident breast cancer in a nationwide prospective cohort.

Methods: We used data from the Sister Study (2003-2009), a cohort study of 50,884 women aged 35-74 at enrollment, who had a sister previously diagnosed with breast cancer. At enrollment, participants self-reported whether they have ever used marijuana and the duration of use. We used Cox proportional hazards models to estimate hazard ratios (HRs) and 95% CIs for the association between history of marijuana use and incident breast cancer among 48,001 eligible women. We adjusted for race/ethnicity, and socioeconomic, reproductive, and behavioral factors. We examined effect measure modification by race/ethnicity and menopausal status. We also used case-only analyses to assess etiologic heterogeneity for ER negative versus positive breast cancer.

Results: Through follow-up (mean=10.8 years), 3,711 women were diagnosed with breast cancer. 23, 150 (48%) reported ever smoking marijuana. After adjustment, a history of ever smoking marijuana was not associated with breast cancer risk (HR=0.95, 95% CI: 0.87-1.03). No differences by race/ethnicity or menopausal status were observed. Women who reported ever smoking marijuana and later developed breast cancer were at reduced odds for the ER-negative type (aOR=0.87; CI: 0.71-1.06).

Conclusion: In this cohort of women, a history of smoking marijuana was not associated with breast cancer risk. A history of ever smoking marijuana may be associated with a reduced likelihood of developing ER-negative BC.

83 T

The Whole Food Plant-Based Diet (WFPBD) Survey: Pros and Cons of a WFPBD Among US Adults

Jovanovic CES, Granata IV F, Kalam F, Pfammatter AF

Purpose: Because WFPBD has metagenomic potential to improve cancer incidence and outcomes, we aimed to elucidate pros & cons towards a WFPBD using a new measure. This study provides preliminary data in a research progression that will develop, test, and optimize interventions to encourage consumption of a WFPBD.

Methods: Participants were recruited via Amazon's Mechanical Turk (MTurk) platform and paid \$10 to complete a survey comprised of 77 items organized around a two-factor model (pros/cons of a WFPBD), with 7 theory-driven psychosocial constructs for each factor. Inclusion criteria were 18 years or older, English fluency, and resident of the US. Pros and cons for a WFPBD, demographic variables, and self-reported dietary measures were evaluated. Significant differences, alone and across relevant demographic variables, were assessed via chi-square tests using STATA version 16.1

Results: Our sample of 412 adults was primarily Caucasian or White (75%), 30 to 60 years old (54%), had a Bachelor's degree or higher (85%), and earned \$45K or higher (68%). Mean value for pros (3.76) was slightly higher than for cons (3.23), and both were significantly associated with self-reported dietary pattern ($p<0.001$ for both), as expected. The highest agreement among pros constructs was for perceived health benefits (3.95) and knowledge of environmental impacts (3.95). For cons, the highest rated constructs were taste preferences (3.35) and attitudes towards animals (3.50). Income and education were inversely associated with instrumental support, perceived health benefits, and attitudes towards animals ($p<0.05$), while those identifying as Asian or Other reported lower self-efficacy for consuming a WFPBD. Compared to other groups, African American and Hispanic or Latino respondents reported lack of instrumental support and concerns about health of a WFPBD.

Conclusions: The WFPBD Survey was able to detect significant differences among our sample, with decisional balance of pros and cons tracking with dietary pattern, and revealing important and significant variations across income, education, and race/ethnicity. These results may be instrumental for development and deployment of interventions intended to promote consumption of a WFPBD in diverse populations.

Molecular Epidemiology & the Environment

84

Association of Helicobacter Pylori and Autoimmune Gastritis with Stomach Cancer in a Cohort of Young Finnish Women

Butt J, Lehtinen M, Ohman H, Waterboer T, Epplein M

Background and aims: An alarming trend of increasing incidence of early-onset stomach cancer (diagnosed <50 years of age) has been observed worldwide, with the underlying etiology largely unknown. Established risk factors for the development of traditional-onset stomach cancer (diagnosed ≥50 years) are *Helicobacter pylori* (*H. pylori*) infection and autoimmune gastritis (AIG). In this study, we assessed the association of these factors with early- and traditional-onset stomach cancers in a case-control study nested

within the prospective Finnish Maternity Cohort (FMC).

Methods: We used multiplex serology to determine sero-positivity to *H. pylori* and AIG in pre-diagnostic sera of 507 stomach cancer cases (297 early-onset and 210 traditional-onset) and 977 age-matched controls. We applied conditional logistic regression models to assess the association of sero-positivity to *H. pylori* and AIG with early- and traditional-onset stomach cancers, overall and by case characteristics.

Results: Early- and traditional-onset stomach cancer were statistically significantly associated with sero-positivity to *H. pylori* (OR: 7.00, 95% CI: 4.93, 9.94 and OR: 7.12; 95% CI: 4.60, 11.01, respectively) and AIG (OR: 3.09; 95% CI: 1.58, 6.02 and OR: 11.66; 95% CI: 4.53, 30.05, respectively). The main histological subtypes associated with *H. pylori* sero-positivity were adenocarcinomas, whereas the association with AIG was mainly driven by carcinoid tumors.

Conclusion: Sero-positivity to *H. pylori* and AIG were associated with higher odds of both early-onset and traditional-onset stomach cancer in this prospective study of fertile-aged Finnish women. This suggests future research should focus on potential co-factors to *H. pylori* and AIG that might contribute to the observed increase in incidence of early-onset stomach cancers.

85

Breast EMICS (Early Moments Informing Cancer Screening) in the Time of “Omics”

Houghton LC, Terry MB, Ulanday K, Walker DAH, Lewis S

Purpose of the study: The incidence of early-onset breast cancer (BC) in adults <40 years old has increased dramatically in the US over recent decades. Given the almost absence of screening in young adults, how they detect their cancers is a black box. One way to illuminate this black box is to incorporate “emics” from young adults with cancer into epidemiologic studies of cancer. “Emics”, from the field of anthropology, is the mapping of insider perspectives from individuals directly affected by the problem under consideration.

Methods: The Young Survival Coalition (YSC) hosts an online forum where young adults with breast cancer “tell their story”. We qualitatively examined 800 online blog posts to determine how early-onset BC was detected. Two coders reviewed posts at the sentence level for 5 deductive codes, including: First Sign, Steps to Diagnosis, Staging & Type, Patient-Provider-System Feelings, and Healthcare Interactions. Interrater reliability was 0.70.

Results: Our preliminary data suggest that the vast majority of young adults find their BC through self-detection and first seek care from OB-GYNs. They noticed breast changes such as lumps (46%), pain (34%), and discharge (11%) confirming breast self-awareness as a means to detection. Patients were not satisfied with their providers and felt ignored (10%), their treatment delayed (10%), lacked trust (11%) and felt their providers were not informed (18%). One woman said, “My doctor has not had a patient as young as me get diagnosed with cancer and has not suggested ANYONE.”

Conclusions: Counseling young adults about breast self-awareness

in OB-GYN settings is a current guideline most salient with our “emic” data. The OB-GYN setting may be a place to implement more targeted screening for early-onset BC. These qualitative results are derived from our mixed-methods approach, designed to identify biocultural drivers of cancer prevention through incorporation of “omics” and “emics”. We previously examined the steroid metabolome with breast cancer risk and found it enhances current risk models by 11%. In the era of “omics,” when molecular markers are incorporated into cancer prevention, “emics” are equally important to identify what is feasible in “real-world” settings.

86 T

Oxidative Stress and Breast Tissue Composition in Adolescent Girls and Their Mothers

Kehm RD, Walter EJ, Santella RM, Tehranifar P, Herbstman JB, Perera F, Miller RL, Lilge L, Terry MB

Purpose of the study: Oxidative stress has been implicated in both the initiation and progression of breast cancer and might mediate associations of environmental and lifestyle factors with breast cancer risk. Yet, there is limited data on the relationship between oxidative stress and breast tissue composition (BTC) across the lifecourse.

Methods: In a cohort of 216 Black and Hispanic mother-daughter dyads in New York City, we examined if urinary concentration of 15-isoprostane F2t ng/ml (adjusted for specific gravity and log transformed), a sensitive and specific marker of oxidative stress, is associated with breast tissue composition in adolescent girls (11-20 years) and their mothers (29-55 years). We used optical spectroscopy to measure BTC, including water, collagen, and optical index, which positively correlate with breast density, and lipid, which negatively correlates with density. We collected urine samples and anthropometry measurements on the same day as optical spectroscopy. We used generalized estimated equation models to account for repeated measures in some daughters (20%) and mothers (16%). Models were adjusted for age and body mass index (BMI), and we tested for additive interactions by these factors.

Results: Overall, a higher urinary concentration of 15-isoprostane F2t was associated with lower water content in the breast tissue of both daughters ($\beta = -1.69$, 95% CI = -3.15, -0.22) and mothers ($\beta = -1.64$, 95% CI = -2.91, -0.37). No overall associations were found with collagen, lipid, or optical index. In daughters, we found that 15-isoprostane F2t was associated with lower optical index in girls with a BMI ≥ 30 kg/m² ($\beta = -0.37$, 95% CI = -0.72, -0.02), but not in girls with a BMI <30 kg/m² (interaction p-value < 0.05). In mothers, a statistically significant additive interaction with BMI was found for collagen content, such that the association was positive, but not statistically significant, in women with a BMI <30 kg/m² and negative, but not statistically significant, in women with a BMI ≥ 30 kg/m² (interaction p-value < 0.05).

Conclusions: Results suggest that oxidative stress might be associated with BTC in adolescence and adulthood and possibly dependent on body size. Prospective studies with repeated measures are needed to explore associations further.

87 T

Variation in KRAS/NRAS/BRAF Mutation Status by Age, Sex and Race/Ethnicity Among Patients with Metastatic Colorectal Cancer (mCRC)

Booker BD, Markt SC, Schumacher FR, Rose J, Cooper GS, Selfridge JE, Koroukian SM

Purpose of the Study: National guidelines recommend molecular profiling of KRAS, NRAS, and BRAF mutations in metastatic colorectal cancer (mCRC) to help inform targeted treatment or eligibility for clinical trials. The objective of this study was to investigate the association between patient demographic characteristics and tumor mutation status among patients with de novo mCRC.

Methods: This study was conducted using the nationwide Flatiron Health electronic health record derived de-identified database including 10,365 patients diagnosed with de novo mCRC, between 2013-2020, with results for at least one biomarker tested at any time (KRAS, NRAS, or BRAF). Mutation status was defined as ever positive (mutant) and wild-type (WT). We used multivariable logistic regression models to investigate patient demographics associated with mutation status, separately for each biomarker, adjusted for microsatellite instability (MSI) and tumor site.

Results: Overall, 47.2% of mCRC tumors were documented KRAS mutant (4,831 of the 10,245 tested for KRAS), 11% were BRAF mutant (759 of the 6,884 tested for BRAF), and 5.3% NRAS mutant (346 of the 6,584 tested for NRAS). Tumors with multiple mutations in these biomarkers were rare ($n=136/7,474$; 0.8%). We observed marked differences in tumor mutation status by age, between men and women, and across racial/ethnic groups. After adjusting for other demographic and clinical factors, older age was associated with an increased odds of having a KRAS or BRAF mutant tumor. Similarly, compared to men, women had higher odds of presenting with a KRAS (adjusted odds ratio (AOR): 1.30, 95% Confidence Interval (CI): 1.20-1.41) or BRAF (AOR: 1.87, 95% CI: 1.58-2.21) mutant tumor. Compared with white patients, Black patients had higher odds of having a KRAS mutant tumor (AOR: 1.60, 95% CI: 1.40-1.83). In contrast, Black (AOR: 0.54, 95% CI: 0.37-0.76) and Hispanic (AOR: 0.53, 95% CI: 0.32-0.84) patients had lower odds of presenting with a BRAF mutant tumor, compared to White patients. Age, sex, and race/ethnicity was not associated with NRAS mutation status.

Conclusions: In this analysis of real-world data among patients with mCRC, KRAS and BRAF mutation status differs across age, sex and racial/ethnic groups. Understanding the distribution of mutations by demographics furthers our understanding of disparities in outcomes among race, sex, and age groups, and can help identify groups that may benefit from genomic testing and targeted therapy. Future studies should explore potential mechanisms underlying these variations.

Survivorship & Health Outcomes/Comparative Effectiveness Research

88

Accelerated Biological Aging Is Associated with a Higher Risk of All-Cause, Cancer-Specific, and Cardiovascular Disease-Specific Death in Older Cancer Survivors

Zhang D, Karanth S, Wheeler M, Yang D, Braithwaite D

Purpose: To assess if risk of all-cause, cancer-specific, and cardiovascular disease (CVD)-specific death varies by levels of accelerated biological aging (ABA) in older cancer survivors.

Methods: We identified 1,391 adults aged 60 years or older who survived for at least 1 year since cancer diagnosis from the cohort of 1999-2010 National Health and Nutrition Examination Survey. We conducted two steps to obtain the measure of ABA. First, based on validated algorithm in prior research, we estimated phenotypic age using 9 blood biomarkers (albumin, creatinine, glucose, c-reactive protein, lymphocyte percent, mean cell volume, red blood cell distribution width, alkaline phosphatase, and white blood cell count) and chronological age. Then, we estimated the residual from a linear model regressing phenotypic age on chronological age; the residual values reflected ABA, with a larger value indicating a higher level of ABA. Death was identified by linkage to the National Death Index through December 31, 2015, and ICD-10 was used to ascertain cause of death. Multivariable Cox proportional hazards models estimated adjusted hazard ratio (aHR) and 95% confidence intervals (CI) of mortality by categories of ABA. In analysis, ABA was categorized as quartiles based on residual values (<-5.3 (reference), -5.3 to <-1.3 , -1.3 to <4.1 , and ≥ 4.1). Restricted cubic splines were applied to depict dose-response curve for ABA.

Results: The mean age of participants at baseline as 72.9 years ($SD=7.2$), 46.4% of them were female, 78.2% were white, and 11.7% were black. Overall, 588 participants died during the follow-up (median: 7.8 years); specifically, 167 and 118 participants died of cancer and CVD, respectively. Multivariable Cox proportional hazards models suggested that ABA (≥ 4.1 vs. <-5.3) was positively associated with all-cause (aHR=2.78, 95% CI 2.16-3.58), cancer-specific (aHR=3.09, 95% CI 1.91-4.99), and CVD-specific mortality (aHR=2.64, 95% CI 1.52-4.59). The dose-response curves suggested similar risk patterns for ABA compared to primary models.

Conclusion: Our study suggests that older cancer survivors with higher ABA have a higher risk of death than their counterparts with lower levels of ABA.

89 T

Adverse Urinary System Outcomes among Older Women with Endometrial Cancer

Anderson C, Lund JL, Park J, Brewster W, Bae-Jump V, Olshan AF, Nichols HB

Purpose of the study: Endometrial cancer and its treatment may

cause damage to the urinary system, but few large-scale studies have examined the incidence of urinary-related outcomes among endometrial cancer survivors. We investigated the risk of several urinary disease diagnoses among older women with endometrial cancer compared to women without a cancer history.

Methods: Women ages 66 years and older with an endometrial cancer diagnosis during 2004-2017 (N=44,386) and women without a cancer history (N=221,219) matched 5:1 on age, race/ethnicity, and state were identified in the Surveillance, Epidemiology, and End Results-Medicare linked data. ICD-9 and -10 diagnosis codes were used to identify urinary outcomes in the Medicare claims data. Cumulative incidences (IP) of urinary outcomes were estimated among women with and without endometrial cancer. Multivariable Cox proportional hazards regression models were used to estimate hazards ratios (HR) for urinary outcomes comparing women with and without endometrial cancer. HRs were also used to identify characteristics associated with urinary outcomes among endometrial cancer survivors.

Results: Relative to women without cancer, endometrial cancer survivors had an increased risk of urinary system diagnoses, including renal failure (5-year IP: 25% vs 14%; HR=1.50; 95% CI: 1.47-1.53), chronic kidney disease (5-year IP: 20% vs 14%; HR=1.25; 95% CI: 1.22-1.28), calculus of the urinary tract (5-year IP: 7% vs 4%; HR=1.55; 95% CI: 1.50-1.61), lower urinary tract infection (5-year IP: 55% vs 33%; HR=1.75; 95% CI: 1.72, 1.78), and bladder diseases (5-year IP: 10% vs 6%; HR=1.57; 95% CI: 1.52, 1.62). These associations persisted in analyses limited to 1+ and 5+ years after endometrial cancer diagnosis. Non-Hispanic Black or Hispanic race/ethnicity, higher comorbidity index, higher stage or grade cancer, non-endometrioid histology, and treatment with chemotherapy and/or radiation were often predictors of urinary outcomes among women with endometrial cancer.

Conclusions: Our results suggest that, among older women, the risk of urinary outcomes is elevated after endometrial cancer. Monitoring for urinary diseases may be a critical part of long-term survivorship care for older women with an endometrial cancer history.

90

Allostatic Load and Risk of Mortality in Older Cancer Survivors: An Analysis of the National Health and Nutrition Examination Survey 1999-2010

Yang D, Zhang D, Braithwaite D, Karanth SD, Wheeler M, Leeuwenburgh C, Zhou D

Purpose: To investigate the association between allostatic load and mortality in older cancer survivors.

Methods: A total of 1,371 adults aged 60 years or older who survived for at least 1 year since cancer diagnosis were identified from the 1999-2010 National Health and Nutrition Examination Survey. Allostatic load score (ALS) was the exposure of interest and incorporated 9 indicators (systolic blood pressure, diastolic blood pressure, heart rate, total cholesterol, high-density lipoprotein, body mass index, glycohemoglobin, c-reactive protein, and albumin). We added 1 point to the ALS if any of the aforementioned indicators

exceeded the normal level. The ALS was categorized as an ordinal variable to reflect low (0-1), moderate (2-3), and high (≥ 4) allostatic load. Our outcomes of interest were all-cause, cancer-specific, and cardiovascular disease (CVD)-specific mortality. Death was identified by linkage to the National Death Index through December 31, 2015. The underlying cause of death was ascertained via ICD-10. Multivariable Cox proportional hazards models were used to estimate adjusted hazard ratio (aHR) and 95% confidence intervals (CI) of mortality by categories of ALS, with ALS=0 or 1 as the reference.

Results: In our study, 53.9% of the participants were male and 79.1% of them were white. The mean age of study participants at interview was 73.0 years (SD=7.2), with 33% of them aged 60 to 69 years, 39.6% aged 70 to 79 years, and 27.4% aged 80 years or older. A total of 573 participants died during the follow-up (median follow-up time: 8.0 years). Among them, 155 died of cancer and 114 died of CVD. Results from multivariable Cox proportional hazards models showed that higher ALS was positively associated with higher all-cause mortality (ALS=4-9 vs. ALS=0-1: aHR=1.50, 95% CI=1.16-1.93, p-trend<0.01) and higher cancer-specific mortality (ALS=4-9 vs. ALS=0-1: aHR=1.79, 95% CI=1.12-2.85, p-trend=0.02). The association between ALS and CVD-specific mortality was positive but non-significant (ALS=4-9 vs. ALS=0-1: aHR=1.72, 95% CI=0.95-3.09, p-trend=0.06).

Conclusion: Our study suggests that older cancer survivors can have a higher risk of death if they are living with a high burden of allostatic load.

91

Association Between Quality of Life and Physical Functioning in a Gardening Intervention for Cancer Survivors

Sharma H, Pankratz S, Demark-Wahnefried W, Blair CK

Purpose: To examine potential predictors of maintaining or improving self-reported physical function among older cancer survivors participating in a gardening intervention impacted by the Coronavirus 2019 (COVID-19) pandemic.

Methods: Thirty cancer survivors completed a home-based gardening intervention to encourage a healthier diet and a more active lifestyle. Device-based measures of physical activity and surveys to evaluate quality of life (QOL; PROMIS-57 questionnaire) were administered at baseline (prior to COVID-19), and mid- (6 months, during COVID-19), and post-intervention (9 months, during COVID-19). Linear mixed effects models were used to evaluate potential associations between baseline and changes in QOL and trends in physical function during this intervention.

Results: The mean age at study enrollment was 68 years (range 50-83), with the following distribution of cancer types: breast (37%), prostate (20%), lung (13%), and other (30%). 53% of cancer survivors maintained or improved their level of physical function during the study. Worse depression, fatigue, and sleep impairment at baseline were significantly associated with worse average physical function score across follow-up (2.3 to 4.9 points lower for every 5-points worse in QOL score; p-values<0.02). Worsening of these

QOL domains during the intervention was also associated with an additional 2.1 to 2.9 points decrease in physical function over follow-up (p-values<0.01). Better social participation and physical activity at baseline were significantly associated with better average physical function score during the intervention (2.8 to 5.2 points higher for every 5-points higher in social participation or 30 minutes more of physical activity). Every 5-points higher in pain at baseline, or increase in pain during the intervention, was associated with a decrease of 4.9 and 3.0 points, respectively, in physical function.

Conclusions: Worse QOL scores before and during the intervention were significantly associated with worse physical function over follow-up. While it is difficult to estimate the effects of COVID-19 on physical activity and QOL measures, encouraging social participation and physical activity through interventions such as home-based gardening may improve long-term health.

92 T

Differences in Breast and Prostate Cancer Treatment by Cognitive Status in the US Health and Retirement Study

Mullins MA, Abrahamse P, Hawley S, Levine D, Kobayashi L, Wallner LP

Purpose: The influence of cognitive impairment on the quality of cancer care is largely unknown. We evaluated the association of pre-diagnosis cognitive status with receipt of cancer treatment for incident breast and prostate cancer in the US Health and Retirement Study (HRS) linked to Medicare claims (2000-2016).

Methods: Medicare-eligible HRS participants aged ≥ 65 whose first and only cancer was breast or prostate, and who had ≥ 1 year of data before and after diagnosis were included (N=2089). Cancer cases were identified in Medicare using the Chronic Conditions Warehouse cancer algorithm. To capture incident cases, we excluded women who did not have breast cancer surgery. Cognitive status, defined as normal, cognitive impairment no dementia (CIND), or dementia, was assessed at the HRS interview prior to cancer diagnosis using the Langa-Weir method. We assessed the receipt of cancer treatments ((surgery, radiation, chemotherapy, and active surveillance (for prostate cancer only)) in Medicare claims. The association between cognitive status and treatment was estimated using multivariable logistic regression adjusting for race, marital status, year, age, activities of daily living, instrumental activities of daily living, education, and comorbid conditions.

Results: In this sample of 334 women with breast cancer and 1,210 men with prostate cancer, 21% of participants had CIND and 7% had dementia prior to their cancer diagnosis. More women with normal cognition received radiation (49%) compared to women with CIND (32%), and dementia (11%) (p<0.05). More men with normal cognition received radiation (7.1%), compared to men with CIND (3.8%) and men with dementia (1.1%) (p=0.02), and more men with normal cognition (19%) were on active surveillance compared to men with CIND (12%) and men with dementia (11%) (p=0.01). Women with dementia had 80% lower odds of receiving radiation compared to women with normal cognition (adjusted OR 0.17 CI 0.03, 0.87).

Conclusions: These findings suggest that in this representative sample of older adults, many had cognitive impairment prior to their cancer diagnosis, which may have influenced their cancer treatment. More research is warranted to elucidate the influence of cognitive impairment on cancer treatment decision making.

93

Differences in Cannabis Use among Cancer Survivors in the U.S, 2019

Sedani AE, Campbell, JE, Beebe LA

Purpose: Cannabis use has been increasing in popularity among cancer survivors; however, little is known regarding prevalence of use, or why cancer survivors use it. The purpose of this study was to describe and compare cannabis use, and reason for use among cancer survivors and individuals with no history of cancer in the US.

Methods: Using data from the 2019 Behavioral Risk Factor Surveillance System (BRFSS), we used weighted multivariable logistic regression models to assess the association of cancer and the dichotomous outcome (cannabis use), adjusting for confounders. Next, weighted prevalence estimates and 95% CI were used to explore the primary method of administration among current cannabis users for cancer survivors and individuals with no cancer history.

Results: The prevalence of cannabis use in the past 30 days for cancer survivors was lower than individuals with no cancer history (9.14% vs. 12.84%). Across both groups, individuals living in a state with recreational use were 2.02 (95% CI: 1.62, 2.53) times more likely to report using cannabis compared to individuals in states where it is fully illegal, after adjusting for covariates. More than half (51.49%) of cancer survivors reported using cannabis for medical purposes, compared to only 27.44% of individuals with no history of cancer. Among individuals with no history of cancer males were more likely than females to report using cannabis, regardless of reason for primary use; however, the inverse relationship was found among cancer survivors.

Conclusion: Although studies have found wide variation in rates in which cancer survivors use cannabis, studies are consistently finding that cancer survivors use cannabis at lower rates than individuals with no history of cancer. However, factors associated with cannabis use and primary reason for use varied between cancer survivors and individuals with no history of cancer. The availability of cannabis for both medical and recreational purposes is increasing. Additional studies are needed to monitor trends in cannabis use among cancer patients and survivors so healthcare professionals can better advise patients about the adverse health outcomes and potential benefits.

94

Effect of Comprehensive Lifestyle Modification Intervention on Health-Related Quality of Life in Prostate Cancer Survivors on Androgen Deprivation Therapy

Algotar AM, Babiker HM, Dougherty ST, Hsu CH, Marrero DG, Smith TE, Jones PA, Lopez JN, Abraham I, Kumar R,

Ligibel JA, Courneya KS, Ramakumar S, Hoy RD, Mack C, Thomson CA

Purpose: To determine the effect of the Comprehensive Lifestyle Improvement Program for Prostate Cancer (CLIPP) on Health-Related Quality of Life (HRQoL), in men on androgen deprivation therapy (ADT) for prostate cancer.

Methods: A single-arm, open label, clinical trial was conducted by recruiting 31 men exposed to ADT within the last five years. A multi-component lifestyle modification intervention (based on a modified Diabetes Prevention Program protocol), consisting of a low-fat diet with aerobic physical activity, was delivered weekly for 16 weeks by a trained health coach. Post-intervention, participants were followed for eight additional weeks to complete a total follow-up period of 24 weeks. The Patient Reported Outcomes Measurement Information System (PROMIS) questionnaire (scored domains: physical and mental health) and the Expanded Prostate Cancer Index Composite (EPIC-26) questionnaire (scored domains: urinary incontinence, urinary irritation, bowel, sexual and hormonal related well-beings) were used to assess overall and disease specific quality of life at baseline, 12, and 24 weeks: Mixed effects regression models (adjusted for age, stage of disease, and duration of ADT) were implemented to determine the changes in HRQoL over time.

Results: Statistically significant improvements in self-reported HRQoL were noted in physical health ($p=0.005$), urinary irritation ($p=0.01$), bowel ($p=0.001$) and hormonal symptoms ($p=0.003$) domains. Minimally important differences (indicating clinical relevance) were exceeded for the urinary irritation, bowel, and hormonal domains.

Conclusion: The CLIPP intervention demonstrates statistically significant and clinically meaningful improvements in overall and prostate cancer-specific quality of life. Lifestyle modification may be beneficial in mitigating ADT associated adverse effects and improving HRQoL of men on ADT for prostate cancer.

95

Endocrine Therapy Initiation Within the First Year of Diagnosis for Invasive, Hormone Receptor-Positive Breast Cancer from 2001-2016, the Kaiser Permanente Breast Cancer Survivors' Cohort

Bowles EJA, Ramin C, Buist DSM, Feigelson HS, Weinmann S, Veiga L, Bodelon C, Curtis RE, Vo JB, Berrington de Gonzalez A, Gierach G

Purpose: Treatment guidelines recommend endocrine therapy for women with estrogen or progesterone receptor positive (ER+ or PR+) breast cancer to reduce second breast cancer events and mortality; however, some eligible women never start endocrine therapy despite studies showing benefits outweigh risks. This retrospective cohort study examined patterns of endocrine therapy initiation within 12 months of diagnosis over time and by demographic, tumor, and treatment characteristics.

Methods: We included 7,777 women from three U.S. integrated

healthcare systems diagnosed with incident invasive stage I-III ER+ or PR+ breast cancer between 2001-2016. We extracted endocrine therapy from pharmacy dispensings, defining initiation as any dispensings within 12 months of diagnosis. Demographic, tumor, and treatment characteristics were collected from electronic health records. Using generalized linear models with a log link and Poisson distribution, we estimated relative risks (RR) and 95% confidence intervals (CI) of initiating any endocrine therapy, tamoxifen, and aromatase inhibitors (AI) over time and by age, race, stage, histology, grade, tumor size, hormone receptor status, HER2 status, surgery, radiotherapy, and chemotherapy. Analyses were adjusted for age, stage, grade, hormone receptor status, diagnosis year, other treatment, and study site.

Results: Among women aged 20+ (mean 61 years), 3,105 (39.9%) initiated tamoxifen first, 3,224 (41.5%) initiated AIs first, and 1,448 (18.6%) did not initiate endocrine therapy. Tamoxifen initiation declined from 67% in 2001 to 15% in 2016. AI initiation increased from 6% in 2001 to 69% in 2016 in women aged ≥ 55 years. The proportion who did not initiate endocrine therapy decreased from 19% in 2002 to 12% in 2014. Women least likely to initiate endocrine therapy were older (RR=0.81, 95%CI=0.77-0.85 for age 75+ vs 55-64), Black (RR=0.93, 95%CI=0.87-1.00 vs white), and had stage I disease (RR=0.88, 95%CI=0.85-0.91 vs stage III).

Conclusions: Despite an increase in AI use over time, at least one in six women with ER+ or PR+ breast cancer did not initiate endocrine therapy within 12 months of diagnosis. It is critical to understand barriers to initiation, ensuring all eligible women have opportunities to discuss risks and benefits.

96

Financial Burden Is Associated with Decreased Healthcare Utilization and Medication Use among AYA Cancer Survivors During the COVID-19 Pandemic

Ou JY, Waters AR, Kaddas HK, Warner EL, Vaca Lopez PL, Mann K, Anderson JS, Ray N, Tsukamoto T, Gill D, Linder L, Fair D, Kirchhoff AC

Purpose: Examine how financial burdens impacted healthcare and medication utilization during the COVID-19 pandemic among adolescent and young adult (AYA) cancer survivors.

Methods: We surveyed AYAs enrolled in a Utah cancer program ($n=341$) about healthcare utilization, changes to medication access and use, and financial burden. Greater financial burden was denoted as having the median or greater number of material hardships (4 to 24) since March 2020 and greater financial toxicity in the past 4 weeks, defined as COST score <21 . Four outcomes were "Yes/No" reports of voluntary skipped/delayed cancer or non-cancer appointments, as well as changes in medication access (e.g. asking for less expensive medicine, shopping for lowest cost medication) or medication use (e.g. lowered dose, skipped refills) that occurred since March 2020. Logistic regression models examined associations between these outcomes while adjusting for appropriate demographics.

Results: Most AYAs were 26-39 years (57.8%), female (61.3%),

and non-Hispanic White (81.5%). In our sample, 19.1% reported skipped/delayed cancer appointments and 35.2% reported skipped/delayed non-cancer appointments. The most commonly skipped/delayed appointments were primary care and oncology/supportive oncology visits. In addition, 23.0% changed their medication access and 15.2% changed their medication use. Skipped/delayed non-cancer appointments were associated with COST score <21 (Odds Ratio=2.51 [95% CI=1.30-4.86]) and ≥ 4 material hardships (2.17 [1.18-4.00]). AYAs with ≥ 4 material hardships had increased odds of skipped/delayed cancer appointments (2.88 [1.32-6.28]). AYAs with ≥ 4 material hardships also had increased odds of changing their medication access (2.54 [1.36-4.76]). Changes in medication use were associated with reporting ≥ 4 material hardships (4.64 [2.14-10.10]) and COST score <21 (3.71 [1.6-8.60]).

Discussion: Primary care, oncology care, and utilization of medications are critical to the detection and management of health conditions among AYAs. Financial burdens reported during the pandemic appear to have adversely interfered with AYAs' ability to engage in these necessary healthcare activities.

97 T

Impact of COVID-19 on a Nationally Representative Sample of Adolescent and Young Adult Cancer Survivors

Betts AC, Shay LA, Allicock M, Preston SM, Murphy CC

Purpose of the study: To describe experiences of adolescent and young adult cancer survivors (AYAs) during the COVID-19 pandemic in a nationally representative sample.

Methods: We identified 71 AYAs (age 18-39 years) with a cancer history and 284 age- and sex-matched non-cancer controls from the population-based National Health Interview Survey (NHIS); the 2020 NHIS survey included questions related to the COVID-19 pandemic. We estimated the proportion of AYAs and non-cancer controls reporting disruptions in health care due to the pandemic and changes in social support, as well as employment, material hardship, mental health issues, and health behaviors. We compared differences in proportions using Chi-square tests.

Results: AYAs were predominantly non-Hispanic White (62.8%) and female (60.2%), with a median age at diagnosis of 28 years (IQR 21-32 years). The most common cancers were gynecologic (27.5%), melanoma or other skin cancers (23.3%), and thyroid cancers (16.1%). AYAs had a higher prevalence of chronic conditions related to COVID-19 severity than non-cancer controls, including asthma (24.2% vs. 8.2%) and diabetes (9.4% vs. 0.9%). A third of AYAs (32.5%) had two or more chronic conditions, and about 10% were immunocompromised. A higher proportion of AYAs delayed care (37.0% vs. 16.1%) or did not get needed care (29.5% vs. 11.8%) because of the COVID-19 pandemic, compared to non-cancer controls ($p < 0.01$). AYAs also experienced greater loss of social and emotional support during the pandemic than non-cancer controls (21.6% vs. 10.8%, $p = 0.03$). Fewer AYAs were employed (58.2% vs. 74.7%, $p = 0.07$), and more than double lived in poverty (30.5 vs. 13.2%, $p < 0.01$) and reported problems paying medical bills (25.1% vs. 12.0% $p = 0.03$). A higher proportion of AYAs experienced sleep problems (32.2% vs. 19.2%, $p = 0.03$) and daily feelings of depression

(8.9% vs. 2.5%, $p = 0.02$) compared to non-cancer controls. A similar proportion of AYAs and non-cancer controls regularly drank alcohol.

Conclusions: The COVID-19 pandemic disrupted care for AYAs and exacerbated the unique challenges and unmet needs of this population. Providers and health systems should ensure that AYAs are reconnected to both medical and psychosocial services and provide age-appropriate, comprehensive care.

98 T

Paclitaxel Treatment Effects on Neurofilament Light Chain (NF-L), a Possible Biomarker of Chemotherapy-Induced Peripheral Neuropathy (CIPN)

Benashley LW, Bucy AM, Wertheim BC, Blew R, Chalasani P, Thomson C, Bea, JW

Purpose: The purpose of the study was to determine if neurofilament light chain (NF-L), a biomarker of neurologic damage in disease states such as ALS, diabetes, and Parkinson's disease increases with neurotoxic chemotherapy.

Methods: Female breast cancer patients (N=21) at two sites (Tucson and Flagstaff, AZ) receiving weekly or biweekly paclitaxel chemotherapy for 3-4 cycles (700-1500mg/m² total dose) completed blood draws every two weeks. A single molecule array (SiMoA) was used to quantify NF-L levels in serum samples (Quanterix). Patients completed clinical neuropathy grading (CTCAE) and a symptom questionnaire with a neuropathy specific subscale (FACT GOG-Ntx) on day 1 of each paclitaxel cycle and within 30 days of the final treatment to characterize chemotherapy induced peripheral neuropathy (CIPN). The association between cumulative paclitaxel dose and NF-L (log-transformed) or Ntx symptom score (log of score plus one) were tested using linear mixed-effects models, adjusted for site, age, and BMI. The association between cumulative paclitaxel dose and CTCAE neuropathy grade was tested using a multilevel mixed-effects logistic regression model, adjusted for site, age, and BMI.

Results: Participants were aged 55.7 ± 11.7 years and with early-stage breast cancer. Serum NF-L increased significantly during taxane chemotherapy: baseline of 38.8 ng/mL; end of study measurement 280.6 ng/mL; $p = 0.001$. The clinical CTCAE neuropathy grade and self-reported neuropathy symptoms worsened from baseline to end-of-study, with CTCAE of 0.2 ± 0.4 to 1.1 ± 0.6 and Ntx subscale (reversed-scored) of 38.4 ± 6.0 to 30.7 ± 7.6 ; both $p < 0.003$.

Conclusions: NF-L and CIPN symptoms increased concurrently during taxane treatment. CIPN biomarker qualification is a critical area of survivorship research given the high prevalence of CIPN and the effects of CIPN on pain, quality of life, and dose reductions. Future research with a larger sample, longer follow-up, and objective neuropathic measures may establish whether NF-L can be used to distinguish women who will develop CIPN during taxane treatment versus those who will not.

99 T

Risk of Second Primary Cancers by Race and Ethnicity among Breast Cancer Survivors

Brandt CH, Vo JB, Gierach GL, Berrington de González A, Ramin C

Purpose of the study: Prior studies have demonstrated that breast cancer survivors have an increased risk of developing a second primary cancer. However, comprehensive data on risk by race and ethnicity have been limited.

Methods: We identified 717,335 women, aged 20-84 years, diagnosed with a localized or regional unilateral first breast cancer between 2000-2017 (followed through 2018) from 17 Surveillance, Epidemiology, and End Results (SEER) registries and who survived ≥ 1 year. We estimated standardized incidence ratios (SIRs; observed/expected) for second primary cancers (excluding ipsilateral breast cancer) by race and ethnicity (non-Latina white, Black, Asian/Pacific Islander [API], and Latina) and by characteristics of the first breast cancer. Expected events were estimated using race and ethnicity-specific cancer incidence rates in the 17 SEER registries accounting for age and calendar year. Poisson regression was used to test for heterogeneity by race and ethnicity.

Results: During 6.0 median years of follow-up, 58,024 breast cancer survivors developed a second cancer. SIRs for second cancer differed significantly by race and ethnicity with the highest elevated risk among Black (SIR, 1.41, 95%CI, 1.37-1.45), API (SIR, 1.49, 95%CI, 1.44-1.54), and Latina women (SIR, 1.45, 95%CI, 1.41-1.49) and less elevated risk among white women (SIR, 1.09, 95%CI, 1.08-1.10) (p -heterogeneity < 0.001). Second cancer risk was markedly elevated among all women diagnosed with breast cancer before age 50 (SIRs, 1.42-2.19; p -heterogeneity < 0.001) or with an ER-negative tumor (SIRs, 1.29-1.94; p -heterogeneity < 0.001). Site-specific SIRs were highest for leukemia and cancers of the contralateral breast, soft tissue, and salivary gland ($\text{SIR} \geq 1.50$ in each racial and ethnic group). Significant heterogeneity by race and ethnicity was observed for leukemia, melanoma, and cancers of the contralateral breast, salivary gland, colon, pancreas, lung, cervix, uterine corpus, ovary, and thyroid (p -heterogeneity < 0.001).

Conclusions: Our results demonstrate striking racial and ethnic differences in second cancer risk among breast cancer survivors. Additional research is needed to inform targeted approaches and early detection strategies to reduce racial and ethnic disparities in second cancer risk.

100

Survival Outcomes in Stage I-III Colorectal Cancer Patients over 65 Years of Age: Results from the National Cancer Database

Hardikar S, Weil CR, Lloyd S, Cohan JN, Supiano MA, Ose J, Peoples AR, Gupta S, Pelletier K, Extermann M, Siegel EM, Shibata D, Ulrich CM

PURPOSE. Older patients (> 65 years) are frequently under-represented in clinical trials that determine cancer treatment guidelines, and consequently may experience worse survival outcomes, even after controlling for advanced age.

METHODS. The National Cancer Database (NCDB) was queried to evaluate overall survival in stage I-III colorectal cancer patients (2004-2017) over 65 years of age. Patients with metastatic disease and non-adenocarcinoma histology were excluded. Standard of care (SOC) therapy was defined as any recommended treatment option listed within site- and stage-specific National Comprehensive Cancer Network guidelines. The Kaplan-Meier product limit method was used to compare the 2-year overall survival (OS) in stage- and site-specific subgroups among those who did vs. did not receive SOC treatment.

RESULTS. A total of 498,285 patients met inclusion criteria; the median age of the patients was 76 years. The majority were non-Hispanic White (88%), female (52%), Medicare insured (86%), colon cancer patients (76%) with a Charlson comorbidity index (CCI) of 0 (63%). Overall, OS was better among those who received SOC treatments for all stage- and site-specific subgroups. For example, among stage I colon cancer patients, 2-year OS for those receiving SOC therapy was 86% compared to 49% among those receiving non-SOC treatments ($p < 0.05$). Results comparing 2-year OS in SOC vs. non-SOC remained significantly different in subgroup analysis for stage I rectal (87% vs. 47%, respectively), stage II-III colon (80% vs. 53%, respectively) and stage II-III rectal cancer patients (85% vs. 67%, respectively). We are currently working on implementing multivariable Cox proportional hazards modeling accounting for age and other comorbidities that are important predictors of survival.

CONCLUSIONS. Compared to patients receiving SOC therapy, overall survival is poorer among stage I-III colorectal cancer patients who receive non-SOC treatments. Multivariable Cox proportional hazard analyses adjusted for relative survival and expected remaining life years based on patients' age are underway to investigate in more detail the associations of specific treatments with overall survival in older colorectal cancer patients.

101 T

The Association Between Cancer and Alzheimer's-Type Neuropathology: A Community-Based Cohort Study

Karanth SD, Katsumata Y, Nelson PT, Fardo DW, McDowell JK, Schmitt FA, Kryscio RJ, Browning SR, Abner EL

Background: Cancer and Alzheimer's disease are common diseases in aging populations. Intriguingly, prior research has reported a lower incidence of Alzheimer's disease dementia among individuals with a history of cancer. Both are prevalent and lethal conditions. The current study was conducted to investigate the association of cancer history with neuropathological and cognitive features.

Methods: Data were drawn from elderly, longitudinally evaluated participants in a community-based cohort study of aging and dementia who came to autopsy at the University of Kentucky Alzheimer's Disease Research Center. The data were linked to the Kentucky Cancer Registry, which is a population-based state cancer surveillance system, to obtain cancer-related data. We examined the relationship between cancer history, clinical dementia diagnoses, Mini-Mental State examination test scores, and neuropathological features using inverse probability weighting to address confounding and selection bias.

Results: Included participants ($n = 785$) had a mean \pm SD age of death of 83.8 ± 8.6 years; 60.1% were female. Positive cancer history was determined in 190 (24.2%) participants. The prevalence of at least one APOE $\epsilon 4$ allele was lower among participants with cancer history compared to cancer-free participants (32.6% vs 42.0%, $P =$

0.0063). Participants with cancer history had lower odds of MCI/Dementia, and higher cognitive test scores (e.g., comparing MMSE scores evaluated at six and < two years prior to death., $P < 0.001$). Cancer history was also associated with reduced odds of intermediate (III/IV) or severe (V/VI) Braak Neurofibrillary tangle stages, moderate/frequent neuritic plaques, moderate/frequent diffuse plaques, and moderate/severe cerebral amyloid angiopathy (all $P < 0.05$). By contrast, TDP-43, α -synuclein, and cerebrovascular pathologies were not associated with cancer history.

Conclusion: In this study, we showed that cancer history was associated with a lower burden of Alzheimer's disease pathology and clinical dementia. These findings provide an additional basis of support for prior epidemiological research reporting a protective association between cancer and Alzheimer's disease-type dementia.

Huron knows cancer centers.

Huron's cancer team comprises nationally recognized leaders with experience at cancer centers across the country. We combine our front-line experience with best practices to support your center, tailoring our approaches to your goals and environment.

We can help you:

- Create strategic plans that align with your catchment area.
- Prepare cancer center support grant applications.
- Develop center of excellence strategies that are unique to your environment.
- Design community and outreach engagement (COE); cancer research training and education coordination (CRTEC); and diversity, equity and inclusion (DEI) strategies that work in synergy.
- Develop strategies to foster engagement across your center.

Learn more about our team by visiting
huronconsultinggroup.com/cancercenters



© 2022 Huron Consulting Group Inc. and affiliates. 22-3118

Open Rank Faculty Opportunities

Division of Public Health Sciences

The Division of Public Health Sciences in the Department of Surgery at the Washington University School of Medicine in St. Louis invites applications for tenure-track/tenured positions at the rank of Assistant, Associate or Full Professor. Our strong team of public health researchers have an outstanding record of biomedical and social science research that range from biology to genomics to social determinants of health, implementation, and population sciences. Many of the research programs address health disparities and integrate community-based strategies. The diverse faculty in the Division lead studies across regional health systems, including rural and underserved populations with a strong focus on community impact.

To Apply

Send:

- Cover letter
- Curriculum vitae
- List of professional references

By email to PHSfaculty@wustl.edu

We are particularly interested in candidates with expertise in health equity, race and socioeconomic disparities in cancer, racial and social inequalities as they impact health, implementation science, and interventions across the cancer care continuum.

Postdoctoral Research Fellowship

Division of Public Health Sciences

Seeking postdoctoral fellowship applicants with an interest in cancer prevention and control to join diverse team of multidisciplinary researchers in the Division of Public Health Sciences and Siteman Cancer Center at Washington University in St. Louis. Our multidisciplinary faculty conducts world-leading research on a wide range of health issues and leads community education and outreach to prevent cancer and other diseases, promote population health, and improve quality and access to health care in Missouri and beyond. Engaging populations underrepresented in research and addressing cancer disparities are priorities in the work we do.

While we welcome applicants in any relevant research area and discipline, these are the highest priorities for the Training Program:

- Cancer Disparities and Health Equity
- Cancer Epidemiology
- Community-based and Community-engaged Research
- Implementation Science
- Shared Decision Making
- Social Determinants of Health

Eligibility and Application Instructions

Eligibility: T32 Applicants are limited to United States citizens, non-citizen nationals, or those lawfully admitted for permanent residence possessing registration requirements.

We particularly welcome applications from first generation college graduates and other backgrounds underrepresented in biomedical sciences. Washington University School of Medicine is an equal opportunity employer.

To apply: send an application, cover letter, curriculum vitae, and professional reference list by email to PHSpostdoc@wustl.edu. Applications are considered on a rolling basis.



The UC San Diego Moores Cancer Center's Cancer Control Program and Community Outreach and Engagement supports ASPO's vision to accelerate progress towards cancer prevention and control. We applaud the 2022 Program Committee for selecting this year's meeting theme of Towards Achieving Health Equity.

*Congratulations to Dr. Elena Martinez,
ASPO's first Hispanic President*



Elena Martinez, PhD

Sam M. Walton Endowed Chair for Cancer Research
Professor, Herbert Wertheim School of Public Health and Human Longevity Science
Associate Director, Population Sciences, Disparities and Community Engagement



Corinne McDaniels-Davidson, PhD
COE Co-Lead
San Diego State University



Samir Gupta, MD, MSCS, AGAF
CCP Co-Lead
Moores Cancer Center



Noe Crespo, PhD
CCP Co-Lead
San Diego State University



@UCSDCancer_COE

UC San Diego
MOORES CANCER CENTER



THE UNIVERSITY OF TEXAS

MD Anderson Cancer Center

Making Cancer History®



TERM TENURE/TENURE-TRACK RESEARCH FACULTY AND PHYSICIAN SCIENTIST OPPORTUNITIES

The University of Texas MD Anderson Cancer Center Division of Cancer Prevention and Population Sciences seeks candidates for an open rank, term tenure track position. The division is comprised of the following departments: Behavioral Science, Clinical Cancer Prevention, Epidemiology, Health Disparities Research, and Health Services Research. Applications will be accepted for any area of science leading, supporting, and promoting rigorous, innovative research and training to prevent cancer and its consequences to improve the health of all people.

The University of Texas MD Anderson Cancer Center is seeking multiple term tenure/tenure-track assistant/associate/full professors to direct leading-edge basic, translational, clinical, population or data science research programs.

As the nation's leading cancer center, MD Anderson is home to many of the top cancer researchers in diverse fields. The institution has established infrastructure and programs that fuel innovation and breakthroughs in support of its mission to eliminate cancer. Researchers at MD Anderson are empowered to conduct cross-disciplinary, collaborative science to accelerate discovery, including implementing speculative approaches that might yield radical innovation. The institution invested more than \$900 million in research last year, and it has made significant investments for the future, including a new state-of-the-art research facility in the TMC³ life sciences complex.

Successful candidates are expected to establish an independent, extramurally funded research program that complements existing research strengths at MD Anderson in the themes listed below. Research should emphasize mechanistic studies and novel computational methods with relevance to multiple cancer types. Competitive applications will describe a clear line of sight for their program to broaden multidisciplinary and interdisciplinary collaborations intended to improve cancer care and outcomes.

Interested basic and translational science applicants should hold a Ph.D., M.D. or M.D./Ph.D. and have at least three years of postdoctoral training with an exceptional publication record. For applications in research domains such as data science and modeling, data visualization or dissemination and implementation science, relevant and impactful experience will be prioritized over traditional length-of-training requirements.

MD Anderson provides competitive salaries and benefits, and laboratory startup packages. Eligible candidates will be encouraged to seek additional recruitment awards from the Cancer Research and Prevention Institute of Texas (CPRIT). Faculty can participate in and recruit from the outstanding training and mentoring programs for graduate students and postdoctoral fellows. MD Anderson actively strives to create and maintain a diverse, equitable and inclusive environment at every level.

Interested applicants should send their CV, a brief (maximum of three pages) research plan with identification of keywords from the themes below, three full-length research papers and contact information of individuals who will provide recommendation letters. Inclusion of up to three letters of recommendation and/or a cover letter to facilitate the initial evaluation process is recommended but not required. All items should be merged into a single PDF file and emailed to researchrecruitment@mdanderson.org. There is no deadline to apply, and applications are reviewed on a rolling basis.

Research Themes:

Biochemistry and Chemical Biology
Cancer Biology and Metastasis
Cancer Disparities
Cancer Genetics and Epigenetics
Cancer Neuroscience
Cancer Prevention and Population-based Research
Computational Oncology
Data Science and Modeling
Data Visualization

Dissemination and Implementation Science
Epidemiology
Genome Biology and Medicine
Immunology and Immunotherapy
Immunoprevention
Tumor Metabolism
Neurobiology
Radiation Oncology and Cancer Imaging
Single-cell 'Omics' Technologies

About MD Anderson

The University of Texas MD Anderson Cancer Center in Houston, Texas ranks as one of the world's most respected centers focused on cancer patient care, research, education and prevention. The institution's sole mission is to end cancer for patients and their families around the world. MD Anderson is one of only 51 comprehensive cancer centers designated by the National Cancer Institute (NCI). MD Anderson is ranked No.1 for cancer care in *U.S. News & World Report's* "Best Hospitals" survey. It has ranked as one of the nation's top two hospitals for cancer care since the survey began in 1990 and has ranked first 16 times in the last 19 years. MD Anderson receives a cancer center support grant from the NCI of the National Institutes of Health (P30 CA016672).

MD Anderson Cancer Center is an equal opportunity employer and does not discriminate on the basis of race, color, religion, age, national origin, sex, sexual orientation, gender identity/expression, disability, veteran status, genetic information, or any other basis protected by federal, state, or local laws, unless such distinction is required by law. All positions at The University of Texas MD Anderson Cancer Center are security sensitive and subject to examination of criminal history record information. Smoke-free and drug-free environment.

Postdoctoral Training Opportunities at Simmons Comprehensive Cancer Center



UT Southwestern Simmons Comprehensive Cancer Center and the Graduate School of Biomedical Sciences, in partnership with the Postdoctoral Affairs Office, support and sustain a postdoctoral experience that emphasizes scholarship and research, as well as professional training. Simmons Comprehensive Cancer Center postdoctoral scholars develop a solid foundation of research knowledge, experimental skills, scientific communication, leadership training, management expertise, and ethics in preparation for independent careers as scientific professionals. Dynamic and collaborative, our postdoctoral scholars keep our institution at the forefront of biomedical research through their cross-disciplinary knowledge of principles and techniques that empower them to work alongside our world-renowned faculty mentors as we continue striving for new discoveries and ways of preventing and treating cancer.

About Simmons Comprehensive Cancer Center and UT Southwestern

Simmons Comprehensive Cancer Center, located in Dallas, Texas, is the only NCI-designated Comprehensive Cancer Center in North Texas. Our center is an incubator for cancer discovery in the region and a leader in research and patient care nationwide. Simmons Comprehensive Cancer Center also has been recognized among the country's top 25 cancer treatment facilities by *U.S. News & World Report*.

Research at our center is organized into five programs: Cellular Networks in Cancer, Chemistry and Cancer, Development and Cancer, Experimental Therapeutics, and Population Science and Cancer Control.

UT Southwestern is the world's No. 1 health care institution for publishing high-quality scientific research, according to the 2021 Nature Index, and is home to many nationally and internationally recognized physicians and scientists, including Nobel

Laureates, HHMI Investigators, and members of the National Academy of Sciences and the National Academy of Medicine. UT Southwestern is proud to be an Anchor Partner for Pegasus Park, which includes the Biotech+ Hub. The Biotech+ Hub focuses on supporting startups around therapeutics, devices/diagnostics, and digital health technologies through flexible lab space, entrepreneurial curriculum, and investment opportunities.



LEARN MORE

Hear directly from our SCCC mentors and their current postdocs and get more information on available opportunities at UT Southwestern Simmons Comprehensive Cancer Center at utsouthwestern.edu/simmons-postdocs.

UT Southwestern Medical Center is committed to an educational and working environment that provides equal opportunity to all members of the University community. As an equal opportunity employer, UT Southwestern prohibits unlawful discrimination, including discrimination on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, citizenship status, or veteran status.

UT Southwestern
Harold C. Simmons
Comprehensive Cancer Center





The Penn State College of Medicine, Department of Family and Community Medicine, is seeking applicants to fill a full-time faculty position at the Associate to Professor level (tenure-track). FCM faculty members provide primary care for patients and conduct research on

the etiology, prevention, and treatment of disease and illness toward promoting health of all Pennsylvanians and for the nation. The candidate will work with internal collaborators in the Penn State Cancer Institute (PSCI) and Public Health Sciences (PHS); other Departments within the University; and with external academic practice/industry partners. The priorities are experienced externally funded scientist in Cancer Prevention, Control, and Population Sciences. This includes scientist with expertise in epidemiology, health services research, artificial intelligence, behavioral interventions targeting cancer risk reduction, rural and underserved minority populations, precision medicine, and innovative technologies to reduce cancer risks. The ideal candidate would be a synergistic addition to areas of strength or address an area of need within the cancer prevention, control and population science research portfolio of FCM and PSCI.

The faculty will devote 80% of their time to cancer-related research. The remaining 20% of the appointment will be devoted to educational mentoring efforts, working with the FCM junior faculty, fellows and other trainees to help advance research and other scholarship missions of the Department. The expectation of the Institution is to have 60% of the research time externally funded within three years of joining Penn State.

Successful candidates will be part of a dynamic team of researchers involved in diverse, primary care-based research and should have a demonstrated record of interdisciplinary research experience and the ability to conduct independent research, assemble and lead teams, pursue external funding, and contribute to multiple projects. This position requires a strong record of peer-reviewed publications, excellent organizational, interpersonal and communication skills, the ability to work in a team environment, and the ability to contribute to the Penn State College of Medicine and FCM's missions.

To apply via the career webpage at <https://hr.psu.edu/careers>, candidates should upload a cover letter with a summary of relevant skills, statement of research interests and goals, current curriculum vitae, and contact information (name, position title, institution, e-mail address) for at least three professional references relevant to this job posting. The successful candidate must pass a background check. Review of applications will begin immediately and continue until the position is closed. Employment will require successful completion of background check(s) in accordance with University policies.

The Pennsylvania State University is committed to and accountable for advancing diversity, equity, and inclusion in all of its forms. We embrace individual uniqueness, foster a culture of inclusive excellence that supports both broad and specific diversity initiatives, leverage the educational and institutional benefits of diversity, and engage all individuals to help them thrive. We value inclusive excellence as a core strength and an essential element of our public service mission.

■ Open Rank, Tenure-Track Faculty Position Available Cancer Epidemiology and Health Outcomes

Rutgers Cancer Institute of New Jersey, a National Cancer Institute (NCI) Designated Comprehensive Cancer Center and the Rutgers Robert Wood Johnson Medical School seek a cancer epidemiology and/or health outcomes researcher with interest in cancer health disparities and/or survivorship. The academic rank for this tenure-track position is open rank and is commensurate with qualifications and experience. The academic appointment will be in the Rutgers Robert Wood Johnson Medical School with a resident faculty appointment at the Cancer Institute of New Jersey. Opportunity for joint appointment with the Rutgers School of Public Health exists.

The successful candidate will: have NIH-funding (or very strong potential for such funding) in cancer focused research; have a sustained focus on cancer epidemiology and/or health outcomes research, be motivated to contribute to a vibrant and collaborative environment of scholars from the basic, clinical and populations sciences; and interest and experience in mentoring students and/or junior faculty. Preference will be given to candidates with a deep understanding of and commitment to cancer health disparities and in the conduct of transdisciplinary cancer research. The selected individual will also be inspired to capitalize on opportunities for collaborations within Rutgers schools/institutes across campus, Princeton University, Rutgers RWJBarnabas Health System, and a wide array of community organizations throughout the state of New Jersey. The Rutgers Cancer Institute of New Jersey has exceptional research resources including the New Jersey State Cancer Registry, ORIEN (Oncology Research Information Exchange Network), and shared resources including: 1) Biostatistics, 2) Population Research Support, 3) Immune Monitoring and Advanced Genetics; 4) Biomedical Informatics; 5) Biospecimen Repository and Histopathology Service; and 6) Metabolomics.

The successful applicant will be expected to establish an innovative, independent, collaborative and extramurally funded research program. Candidates should possess a doctoral degree in epidemiology or related field with a strong publication record, and a history of external grant funding (or demonstrated potential to obtain funding) in cancer-relevant research. Preference will be given to candidates with peer-reviewed funding. Strong preference will be given to applicants with an established track record in interdisciplinary collaboration as well as innovative ideas and experience from which to build a strong extramurally funded research program. Faculty are expected to support the educational goals and activities of the School, and as such will be expected to be involved in teaching activities for medical students and residents as well as targeted lectures in their area of expertise. Rutgers is committed to fostering and maintaining a diverse work culture that respects the rights and dignity of each individual, without regard to race, color, national origin, ancestry, religious creed, sex, gender identity, sexual orientation, gender expression, height, weight, marital status, disability, medical condition, age, or veteran status.

Rutgers Cancer Institute is the only NCI-designated comprehensive cancer center in the state and is easily accessible to Manhattan, Newark Airport, and Philadelphia by public transportation. Please address letter of research interests and 3 reference letters to: Dr. Elisa Bandera, Chief, Cancer Epidemiology and Health Outcomes, Rutgers Cancer Institute of New Jersey. For questions on this position or to learn more about our available positions, please contact the Rutgers Cancer Institute Faculty Recruitment Office at: facultyaffairs@cinj.rutgers.edu.

To apply, please visit: <https://jobs.rutgers.edu/postings/137666>

Rutgers, The State University of New Jersey is an Equal Opportunity/Affirmative Action employer.



MARGARET M. & ALBERT B. ALKEK
DEPARTMENT OF
MEDICINE
EPIDEMIOLOGY
AND POPULATION
SCIENCES

POSTDOCTORAL FELLOWSHIP in *Systems Epidemiology of Cancer*

The Section of Epidemiology and Population Sciences in the Department of Medicine at Baylor College of Medicine announces the availability of postdoctoral fellowships (selected on a rolling basis) in our Systems Epidemiology of Cancer Training Program supported by the Cancer Prevention and Research Institute of Texas (CPRIT). Our program is designed to accelerate the training of the next generation of cancer epidemiologists/bioinformaticians in integrating epidemiologic studies with technological advancements in data sciences and analytic platforms.

We are seeking PhD epidemiologists/bioinformaticians/MDs/DVMs with relevant training who can enroll in one or more of our five interacting themes – Big Data, Molecular/Omics, Environmental, Behavioral and Computational Epidemiology. This is a 3-year flexible program with personalized educational curricula and individually tailored multidisciplinary teams of mentors with ongoing research in a variety of pediatric and adult cancers. Our unique institutional core resources and experienced cadre of faculty mentors will provide rich research and educational opportunities. Exciting opportunities also exist to work with faculty from MD Anderson Cancer Center, Rice University and UTHealth School of Biomedical Informatics.



For further details visit our website at www.bcm.edu/epitraining

Fellows are not restricted to permanent U.S. residents or citizens. Baylor College of Medicine is an Equal Opportunity/Affirmative Action/Equal Access Employer.

Cancer Prevention Fellowship Program

Applications accepted May–August for positions starting the following June.

Be a part of the program that supports postdoctoral research and professional development, plus offers:

- Competitive stipends, relocation expenses, health insurance benefits, and travel allowances
- Support for up to four years
- Opportunity to earn your MPH, sponsored by NCI
- Research opportunities with experienced NCI mentors
- A cohort of fellows spanning STEM and other fields



cpfp.cancer.gov



CPFPCoordinator@mail.nih.gov

Faculty Positions in Cancer Control and Population Sciences

The University of Florida Health Cancer Center (UFHCC) seeks outstanding, collaborative scientists in areas of Cancer and Aging, Cancer Disparities, Obesity and Cancer, Cancer Data Science, and Cancer Epidemiology (including expertise in Molecular, Clinical, or Genetic Epidemiology). We seek candidates who are committed to fostering diversity, equity and inclusion in their research teams and across the institution, and especially encourage applications from candidates belonging to underrepresented groups.

About the UF Health Cancer Center

The University of Florida Health Cancer Center stands alone in the state of Florida in its unique ability to blend comprehensive patient care and innovative research in a collaborative, multidisciplinary environment. It boasts a membership of more than 280 researchers and clinicians from across the University of Florida and UF Health, the Southeast's most comprehensive academic health center. Researchers from around the world enjoy a low cost of living and proximity to world-class beaches, state parks and crystal-blue freshwater springs.

Requirements

Applicants should have a PhD in epidemiology, public health or related discipline, or MD with relevant training in epidemiology or public health. They should demonstrate potential for excellence in research and extramural funding, and be highly motivated to work in a collaborative research program. Faculty positions at the associate or full professor level will require a strong track record of research, external funding, and academic mission.

Application & Inquiries

Submit letter of interest, CV, and references to Dejana Braithwaite, PhD
Associate Director for Population Sciences; Director, Center for Cancer and Aging
c/o Dr. Braithwaite's assistant, Peggy Ford: ford.m@ufl.edu





Ohio State seeking **Survivorship Center** and **Prevention Center** **directors**

Survivorship Center director

The Ohio State University Comprehensive Cancer Center – James Cancer Hospital and Solove Research Institute (OSUCCC – James) is recruiting an outstanding faculty candidate to serve as **director of the Survivorship Center**. The successful candidate will have focused research in cancer survivorship (observational and/or interventional studies), a track record of NIH funding and a commitment to cancer research in the areas of epidemiology, health disparities and health outcomes. Appointment at the rank of professor requires a strong record of research, external funding, publications, teaching and service. This position includes a package for the individual to build the Survivorship Center and to recruit faculty, as this area is a focus of our strategic plan.

Prevention Center director

OSUCCC – James is recruiting an outstanding faculty candidate to serve as **director of the Prevention Center**. The successful candidate will have focused research in cancer prevention (observational and/or interventional studies), including molecular and genetic epidemiology, a track record of NIH funding and a commitment to cancer research in the areas of epidemiology, health disparities and health outcomes. Appointment at the rank of professor requires a strong record of research, external funding, publications, teaching and service. This position includes a package for the individual to build the Prevention Center and to recruit faculty, as this area is a part of our strategic plan.

About OSUCCC – James

OSUCCC – James strives to create a cancer-free world by integrating scientific research with excellence in education and patient-centered care, a strategy that leads to better methods of prevention, detection and treatment. Ohio State is one of 51 National Cancer Institute (NCI)-designated comprehensive cancer centers and one of only a few centers funded by the NCI to conduct both Phase I and II clinical trials on anticancer drugs provided by the NCI. At Ohio State, more than 340 cancer researchers and their teams from 11 of 15 colleges work collaboratively, across multiple disciplines, to improve the effectiveness of cancer prevention, diagnosis and treatment.

As the cancer program's 356-bed adult patient-care component, the James is one of the most highly regarded cancer hospitals in the nation as ranked by *U.S. News & World Report*. With 21 floors and more than 1.1 million square feet, The James is a transformational facility that fosters collaboration and integration of cancer research and clinical cancer care. To learn more about the OSUCCC – James, visit cancer.osu.edu

Candidate requirements:

- Doctoral degree in epidemiology or related discipline, or an MD with a graduate degree in epidemiology or related discipline
- Demonstrated ability to conduct scholarly cancer research
- Experience mentoring pre- and post-doctoral students and teaching at the graduate level
- Highly self-motivated individual, enthusiastic about scientific discovery and able to collaborate closely and effectively with other members of a research team
- Demonstrated ability or potential to secure external funding
- Excellent communication skills (verbal, written and oral)

Submit inquiries and application materials (cover letter, CV, statement of research accomplishments, interests) to: 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)

The James



Be part of our courageous mission.

Come join the outstanding leadership team at Moffitt Cancer Center, the only NCI designated comprehensive cancer center based in Florida. We are seeking two enthusiastic mid- or later career population scientists to fill vital roles in our thriving population science departments and programs. Successful candidates must have:

- Research Administrative Experience
- Active, Peer-reviewed Funded Research Program
- Strong Publication History

Preference will be given to candidates who have demonstrated prior leadership and mentoring and have engaged in team science. These positions are tenure-earning at the Associate or Senior Member level.

Program Leader for Cancer Epidemiology

The Cancer Epidemiology Program is home to 26 full-time faculty engaged in impactful research to reduce the cancer burden across the full spectrum of cancer control. Faculty interests span numerous research arenas, with most having a large focus on molecular epidemiologic approaches. Areas of strategic research growth at Moffitt include metabolomics, cancer care delivery, data science, and immuno-epidemiology. Candidates with a dynamic research program in the development or implementation of risk prediction models or clinical epidemiology including secondary analyses using large data sets are specifically encouraged to apply. The Program Leader will be a member of the scientific leadership team, with shared responsibility for guiding and facilitating research within and across programs and institutions.



For additional information, visit our website [Moffitt.org/Careers](https://moffitt.org/Careers) and refer to requisition number 47785.

Department Chair in Health Outcomes and Behavior

The Health Outcomes and Behavior (HOB) Department consists of 20 members representing a variety of academic disciplines and engaged in cancer prevention and control research across the full cancer continuum, from prevention, screening, and diagnosis to active treatment, long-term survivorship, and end-of-life. Department members are deeply engaged in the community and are highly integrated with clinical care at Moffitt. This engagement and integration inform clinically important research questions of high relevance to the catchment area and fosters the translation of research findings into evidence-based care and changes in health care policies.



For additional information, visit our website [Moffitt.org/Careers](https://moffitt.org/Careers) and refer to requisition number 53598.

SAVE THE DATE!

ASPO 47th Annual Meeting **March 13-15, 2023**

San Diego, CA
Hilton San Diego Bayfront

Abstract Submission
opens October 2022

www.aspo.org



**AS
PO**