# ASPO

## American Society of Preventive Oncology

# 43rd Annual Meeting

## March 9-12, 2019

# Program & Abstracts

Hilton Tampa Downtown

Tampa, Florida

## Welcome to the American Society of Preventive Oncology Annual Meeting

The American Society of Preventive Oncology strives to promote the exchange and dissemination of information and ideas relevant to cancer prevention and control; to identify and stimulate research areas in cancer prevention and control; and to foster the implementation of programs in cancer prevention and control.

## Table of Contents

## Registration

All conference participants must check in at the registration table located in Galeria B to recieve name badges and other conference material.

Registration Desk
Sunday, March 10      11:00 a.m. - 5:00 p.m.
Monday, March 11      8:00 a.m. - 5:00 p.m.
Tuesday, March 12     8:00 a.m. - 3:00 p.m.

## Wifi

Wifi is available in guest hotel rooms. Meeting room wifi will not be available.

## Social Media

Keep the conversation going! Get the latest meeting updates by following ASPO and join the conversation using #ASPO2019.

@ASPrevOnc

## Assistance to Participants

The American Society of Preventive Oncology meeting staff are available to provide assistance or information at any time during the meeting. Questions should be addressed to the staff members and volunteers at the Registration Desk.

## Poster Sessions

This year's poster session and reception will be Monday, March 11 in the Bayshore Ballroom of the Hilton Downtown Tampa. Please have your poster displayed by 2:00 p.m. for judging purposes. Push pins will be available. The poster session and reception will be from 5:30-7:30 p.m. Posters must be taken down by 11:00 a.m. on Tuesday, March 12. You can find your poster number in the poster directory on pages 31-35.

Prior to the poster session, judges will review posters of the top ranking submitted abstracts. The awards are:

Best Poster overall: Plaque (to be engraved)
2nd Place Poster honorable mention
3rd Place Poster honorable mention
4th Place Poster honorable mention

## Trainee (Pre- and Post-doc) Poster Prizes

2 prizes to be given: 1st and 2nd place each get a $100 check (contact Heidi Sahel at the registration table)

A distinguished panel of faculty will select outstanding posters at the poster session. Awards will be announced and presented at the end of the poster session, along with a brief discussion of the winners' merits. Presenters should be positioned near their posters during the poster session for discussion and judging. All posters not taken down after the poster session will be removed and put in the registration area.

## Meals

Continental breakfast will be served on Monday and Tuesday during the breakfast sessions. Boxed lunches will be served during the lunch sessions on Monday and Tuesday.

## Online Survey

Please respond to the online survey that will be sent soon after the meeting. This will help future Program Committees and conference staff to better meet your professional and logistical needs.

## Next Year

The 44th Annual Meeting of the American Society of Preventive Oncology will be: March 21-24, 2020 at the Marriott Tucson, University Park, Tucson, AZ.

**ASPO** *American Society of Preventive Oncology*

March 21-24, 2020

Tucson, AZ

# Special Acknowledgements

## Program Co-Chairs:

Hazel Nichols, PhD
University of North Carolina at Chapel Hill

Jasmin Tiro, PhD
University of Texas Southwestern Medical Center

## 2019 Program Committee Members:

Peter Kanetsky, PhD, MPH
Moffitt Cancer Center &
Research Institute

Cindy Blair, PhD
University of New Mexico

Dejana Braithwaite, PhD
Georgetown University

Bette Caan, DrPhD
Kaiser Permanente Northern
California Division of Research

Jeanine Genkinger, PhD
Columbia University

Beth Glenn, PhD
UCLA Center for Cancer Prevention
and Control Research

Clement Gwede, PhD
Moffitt Cancer Center &
Research Institute

Theresa Hastert, PhD
Karmanos Cancer Institute

Erin Kobetz, PhD
University of Miami

Jarod Stapleton, PhD
Rutgers Cancer Institute
of New Jersey

Stephen Taplin, PhD
National Cancer Institute

Alexandra White, PhD
National Institute of Environmental
Health Sciences

Amy Trentham-Dietz, PhD
University of Wisconsin - Madison

# ASPO Leadership

## ASPO Executive Committee Members
(parentheses indicates term expiration)

President
Peter Kanetsky (2019)

President-Elect
Karen Basen-Engquist (2021)

Past President
Polly Newcomb (2017)

Secretary/Treasurer
Cheryl Thompson (2021)

At-Large Members
Sandi Pruitt (2021)
Li Li (2022)
Shine Chang (2020)

Staff
Heidi Sahel
Eileen McGuine

## Special Interest Groups

Behavioral Science & Health Communication
Chair: David Cavallo (2019)
Vice-Chair: Carmina Valle

Molecular Epidemiology & The Environment
Chair: Katherine Reeves (2020)
Vice-Chair: Elizabeth Hibler

Lifestyle Behaviors, Energy Balance & Chemoprevention
Chair: Elisa Bandera (2019)
Vice-Chair: Marji McCullough

Survivorship & Health Outcomes/ Comparative Effectiveness Research
Chair: Erin Kent (2020)
Vice-Chair: Kate Weaver

Cancer Health Disparities
Chair: Yamilé Molina (2020)
Vice-Chair: Theresa Hastert

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

Early Career Development
Chair: Allison Burton-Chase (2020)
Vice-Chair: Tracy Crane

International Issues in Cancer
Chair: Tomi Akinyemiju (2019)
Vice-Chair: Ramzi Salloum

# ASPO Award History

| Year | Joseph F. Fraumeni, Jr., Distinguished Achievement Award | Distinguished Service Award | Joseph Cullen Award in Tobacco Research |
|------|------|------|------|
| 1983 | Michael Shimkin | | |
| 1984 | Ernst Wynder | | |
| 1985 | Sam Shapiro | | |
| 1986 | William Haenszel | | |
| 1987 | Lester Breslow | | |
| 1988 | Nicholas Petrakis | | |
| 1989 | Alfred Knudson | | |
| 1990 | Saxon Graham | John Weisburger | |
| 1991 | Barbara Hulka | | |
| 1992 | David Schottenfeld | | Ellen Gritz |
| 1993 | Joseph Fraumeni | | Thomas Glynn |
| 1994 | Anthony Miller | Richard Love | Tracy Orleans |
| 1995 | Pelayo Correa | | Donald Shopland |
| 1996 | Walter Willett | Al Neugut | Michael Fiore |
| 1997 | Barbara Rimer | | Edward Lichtenstein |
| 1998 | Peter Greenwald | | Jack Henningfield |
| 1999 | J. Potter/W.Ki Hong | | John Pierce |
| 2000 | Margaret Spitz | | Susan Curry |
| 2001 | I.B. Weinstein/Ellen Gritz | | David Burns |
| 2002 | Robert Hoover | | Jonathan Samet |
| 2003 | Leslie Bernstein | | K. Michael Cummings |
| 2004 | Dave Alberts | | Caryn Lerman |
| 2005 | Graham Colditz | | Stanton Glantz |
| 2006 | Frank Meyskens | Carolyn Aldige | Gary Giovino |
| 2007 | Bernard Levin | | Michael Thun |
| 2008 | Malcolm C. Pike | | David Abrams |
| 2009 | Mitchell Gail | | Ronald Davis (posthumously) |
| 2010 | Paul Engstrom | | Jasjit Ahluwalia |
| 2011 | Patricia Ganz | | Alex Prokhorov |
| 2012 | Electra Paskett | | Stephen Hecht |
| 2013 | Polly Newcomb | | Dave Wetter |
| 2014 | Bob Croyle | | Vish Vishwanath |
| 2015 | Richard R. Love | Amy Trentham-Dietz | Cheryl L. Perry |
| 2016 | Alfred I. Neugut | | Peter Shields |
| 2017 | Timothy Rebbeck | | Kurt Ribisl |
| 2018 | Beti Thompson | | Thomas Brandon |
| 2019 | Anna Giuliano | | James Sargent |

# 2019 Awards

**2019 ASPO Joseph F. Fraumeni, Jr., Distinguished Achievement Awardee**
Anna Giuliano, PhD, Moffitt Cancer Center and Research Institute

**2019 Joseph Cullen Award in Tobacco Research**
James Sargent, MD, Geisel School of Medicine at Dartmouth

**ACS Travel Awards**
**Eighth Annual Calle/Rodriguez Minority Travel Awards for a Top-Ranked Abstract**
Travel Funded by The American Cancer Society

**Andres Ardisson Korat, ScD,** Brigham and Women's Hospital. Channing Division of Network Medicine
A prospective analysis of red blood cell trans fatty acid levels and risk of non-Hodgkin lymphoma

**Serena Rodriguez, PhD, MPH,** University of Texas Southwestern Medical Center
Delivering cervical cancer screening and follow-up to women with HIV in an integrated safety-net setting

**ASPO Travel Awards**
Eighth Annual Electra Paskett Scholarship Travel Award for the Top-Ranked
Pre- or Post-doctoral fellow

**Juhan Lee, BA,** University of Florida
Negative Affect and Utilization of Evidence-Based Tobacco Treatment among Adults with Cancer

**Other ASPO Travel Awards chosen from top-ranked abstracts**

**Oluwole Babatunde, MBBS, MPH**, University of South Carolina
A comparison of Mortality-to-Incidence Ratio with Survival Analyses in Assessing Racial Breast Cancer Disparities Across South Carolina Counties

**Xiaochen Zhang, MPH**, The Ohio State University
The Mediation Effect of Body Image on Physical Activity and Psychological Health in Older Female Cancer Survivors

**Paige Lake, MPH,** University of South Florida
"It's a prescription, not an addiction": Exploring Health Care Provider and Advocate Perceptions of Opioid Use Among Cancer Survivors

# Support Acknowledgements

The Program Committee wishes to express appreciation to the following organizations for their commitment to supporting ASPO.

## Moffitt Cancer Center and Research Institute

## The Ohio State University Comprehensive Cancer Center

## The Newcomb Family Foundation

## National Institutes of Health

## Breast Cancer Research Foundation

## American Cancer Society

In 2012, the American Cancer Society and American Society of Preventive Oncology announced the first annual "Calle/Rodriguez Minority Travel Award for a Top-Ranked Abstract" funded by the American Cancer Society. Drs. Jeanne Calle and Carmen Rodriguez were highly-respected epidemiologists, beloved colleagues and friends to many in the cancer research community. As Vice President of Epidemiology at the American Cancer Society, Dr. Calle was Principal Investigator of the Cancer Prevention Study (CPS)-II, a prospective study of more than one million men and women designed to identify risk factors for cancer. In particular, Dr. Calle was the lead author on widely-cited landmark studies establishing the link between obesity and cancer risk. She also guided the development and initiation of CPS-III, a study that will further our understanding of the causes of cancer and ways to prevent it for the next generation. A physician from Spain, Dr. Rodriguez was the Strategic Director of the CPS-II biospecimen repository. She published more than 100 scientific articles, with a special interest in studying ovarian and prostate cancers. Her work on the associations between hormone replacement therapy and cancer risk earned widespread media attention. Dr. Rodriguez also served as a Spanish-speaking spokesperson for the American Cancer Society. Professionally, Jeanne and Carmen were more than scientists; they were valued colleagues and committed mentors to many. Carmen and Jeanne passed away within months of each other in 2008-2009. While their deaths have been a tremendous loss, their spirits will live on in part due to the generosity of others whose donations allow the American Cancer Society to create this memorial award.

## Feel Good, Inc.

Feel Good, Inc. provides portable TENS (transcutaneous electrical nerve stimulation) units offering wide variety of benefits, including alleviating back, nerve and diabetic pain and migraines. Our units can also improve circulation, sleep patterns and have been shown to decrease the use of pain relievers that can cause negative side effects.  Please feel free to visit our website at www.feelgoodinc.org
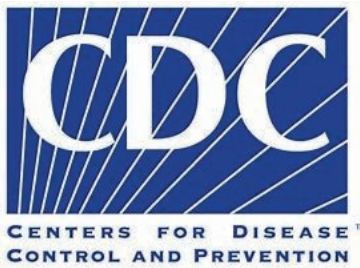
## Centers for Disease Control and Prevention

The CDC is a leader in efforts to reduce preventable cancers and improve the health of cancer survivors. CDC collects data on all cancer cases in the United States and works with national organizations and state and local health agencies to help Americans lower their cancer risk by increasing the use of effective cancer prevention programs and screening tests.

## H. Lee Moffitt Cancer Center and Research Institute
Moffitt.org

Moffitt Cancer Center strives to be the leader in understanding the complexity of cancer through team science and applying those insights for human benefit. Be part of the prevention or cure by joining our team of over 800 research faculty, career research scientists, postdocs, graduate students, and support staff dedicated to cancer research.

# Agenda

## SATURDAY, MARCH 9, 2019

3:00 p.m. - 7:00 p.m.
Palma Ceia 1-2

**Cancer Prevention & Control Associate Directors/Program Leaders Workshop  -  Part 1**
(Invitation only)
Organizer: **Electra Paskett, PhD**, The Ohio State University

## SUNDAY, MARCH 10, 2019

8:00 a.m. - 5:00 p.m.
Galleria B

**Conference Registration**

8:00 a.m. - Noon
Palma Ceia 1-2

**Cancer Prevention & Control Associate Directors/Program Leaders Workshop  -  Part 2**
(Invitation only)
Organizer: **Electra Paskett, PhD**, The Ohio State University

9:00 a.m. - Noon
Palma Ceia 3

**New Investigators Workshop** (Invitation only)
Organizer: **Judith Jacobson, DrPH, MPH**, Columbia University

Faculty:
**Judith Jacobson**, DrPH, MPH, Columbia University
**Polly Newcomb, PhD**, Fred Hutchinson Cancer Research Center
**Michael Scheurer, PhD**, Baylor College of Medicine
**Deborah Glueck, PhD**, University of Colorado-Denver

Selected Participants:
**Julia Butt, PhD,** Duke Cancer Institute
*Risk of developing colorectal cancer in association with antibody responses to Helicobacter pylori and Streptococcus gallolyticus*

**Meera Muthukrishnan, MPH**, Saint Louis University College for Public Health and Social Justice
*Examining barriers to HPV vaccination among individuals aged 18-35 living with HIV*

**Mya Roberson, MSPH**, University of North Carolina at Chapel Hill
*Evaluating Geographic Variation in Breast Cancer Surgical Outcomes Among Black Women in the US South*

**Serena A. Rodriguez, PhD**, University of Texas Southwestern Medical Center
*Assessing Cervical Cancer Screening among Resettled Refugee Women in an Integrated Safety-Net Healthcare Setting*

**Udara Perera, MPH, DrPH**, Drexel University
*Understanding Perinata Hepatitis B as a Pathway to Preventing Liver Cancer Disparities in Philadelphia*

**Nur Zeinomar, PhD**, Columbia University Mailman School of Public Health
*Integrating pedigrees with polygenic risk to enhance outcome assessment in a cohort of breast cancer survivors*

12:30 p.m. - 2:30 p.m.
Garrison Suites

**Working Lunch Meeting of the ASPO Executive Committee** (Invitation only)

# Agenda

1:00 p.m. - 3:45 p.m.
Bayshore 2

**ASPO Junior Members Sessions** (Open to all)

1:00 p.m. - 2:15 p.m.

**ASPO Junior Members Session 1: Writing a Career Development Grant:  Insights from Across the Research Pipeline**

Co-Chairs:
**Traci Bethea, PhD,** Boston University,
**Jesse Plascak, PhD,** Rutgers University, and
**Anushree Sharma, PhD,** Univeresity of Texas M.D. Anderson Cancer Center

Panelists:
**Elisa Bandera, MD, PhD,** Cancer Institute of New Jersey
**Lauren Peres, PhD, MPH,** Moffitt Cancer Center
**Heather Jim, PhD,** Moffitt Cancer Center

Having an externally funded, continuous research program is a major expectation of faculty employed within various academic positions. Receiving a career development award is one way to jump-start progress towards this goal. Aspiring graduate students and junior faculty need to learn about the art of successful grant writing. However, gathering information about what a successful career development grant looks like is no easy feat. A popular aphorism suggests that the quality of grant writing cannot help a bad idea, but that bad grant writing can doom a good one. So, what is good grant writing? This session seeks to answer that question through insights shared by an expert panel consisting of an awardee, a mentor, and a study section reviewer for career development grant mechanisms, with a focus on NCI K mechanisms. Participants will gain access to resources to assist with grant writing. Additionally, attendees will have the opportunity to engage with the panel during the question and answer period.

2:30 p.m. - 3:45 p.m.

**ASPO Junior Members Session 2: Strategies for Success:  Landing your First Academic Position and Navigating the Early Years**

Co-Chairs:
**Saira Khan, PhD, MPH,** Washington Univ.in St. Louis
**Sheetal Hardikar, MBBS, PhD,** Huntsman Cancer Institute

Panelists:
**Katherine Reeves, PhD, MPH,** University of Massachusetts
**David Wetter, PhD, MS,** Huntsman Cancer Institute

Finding your first faculty position is time-consuming and tedious work. Furthermore, once you land this coveted position, the early years of faculty appointment can be a challenging and overwhelming experience, having to juggle the many research, teaching, and administrative responsibilities. This session will focus on strategies for success during the postdoctoral and early faculty years, arguably the most critical time period in the quest for gaining research independence. The session will provide tips for securing a faculty position, starting with best practices during post-doctoral training, defining priorities (research vs. teaching), resources for job postings, getting your application packet ready, and tips for faculty interviews. The latter half of the session will focus on early faculty years, addressing topics such as balancing competing priorities (grants, papers, teaching, and administration), seeking mentorship, time management, maximizing productivity, and facilitating collaboration. We will conclude with a question and answer session conducted by panelists across the academic continuum - from post-doc to senior faculty. Session panelists include Saira Khan, PhD, MPH (Post-doctoral Fellow), Sheetal Hardikar, MBBS, PhD (Assistant Professor), Katherine Reeves, PhD, MPH (Associate Professor), and David Wetter, PhD, MS (Professor and Division Chief).

# Agenda

3:00 p.m. - 4:00 p.m.
Esplanade 1

**Meeting of NCI R25T & T32 Training Program Principal Investigators**
Organizer:  Shine Chang, PhD, University of Texas M.D. Anderson Cancer Center

4:15 p.m. - 4:45 p.m.
Bayshore 1

**Opening Session of the ASPO General Meeting & Presidential Address**

4:45 p.m. - 5:15 p.m.

**Fraumeni Distinguished Achievement Award Address:**
Anna Giuliano, PhD, Moffitt Cancer Research Center
*A 30 Year Journey from Cervical Cancer Control to Elimination of HPV-Related Cancers*

5:15 p.m. -5:45 p.m.

**Cullen Tobacco Award Address:**
James Sargent, MD, Geisel School of Medicine at Dartmouth
*Corporate Products, Science, and Public Health*

Break

6:00 p.m. - 7:30 p.m.
Bayshore 1

**Symposium 1: Innovations and Interventions to Address Cancer Health Disparities at the Residential and Systems Level**
Chair:  Theresa Hastert, PhD, Karmanos Cancer Institute

Jennifer Griggs, MD, MPH, University of Michigan
*Addressing disparities in cancer care among sexual & gender minorities*

Erin Kobetz, PhD, University of Miami
*Scan 360: A Visualization Tool for Understanding and Addressing Cancer Disparity*

Gloria Coronado, PhD, Kaiser Permanente Center for Health Research
*Using systems-level approaches to promote colorectal cancer screening and follow-up*

7:30 p.m. - 8:30 p.m.
Esplanade Patio

**Junior-Senior Networking Mixer** (Cash bar and light appetizers)
(Open to all)

8:30 p.m.

Dinner on your own

# Agenda

8:00 a.m. - 9:30 a.m.
Palma Ceia 1-3

**Concurrent Breakfast Sessions** (continental breakfast included)
**Breakfast Session 1:  Cancer Health Disparities**
Progress toward a Life-Course Perspective in Cancer Surveillance Research: Incorporating Residential Histories into Population-Based Cancer Registries through Linkage with Public Records
Chair: **Yamile Molina, PhD,** University of Illinois - Chicago

**Antoinette M. Stroup, PhD,** Director, New Jersey State Cancer Registry
**Kevin Henry, PhD,** Temple University

8:00 a.m. - 9:30 a.m.
Bayshore 2

**Breakfast Session 2:  Survivorship, Health Outcomes & Comparative Effectiveness**
Title: Multiple Chronic Conditions and Care Coordination among Cancer Survivors

Individuals are living longer with a history cancer, and many are dealing with other chronic conditions in addition to late/long-term effects from cancer and cancer treatment. The need to manage and coordinate health care services and communicating with a variety of healthcare providers can be challenging.  This year's SIG will focus on research questions related to the coordination of care delivery for cancer patients with multiple chronic conditions.

Co-Chairs:
**Erin Kent, PhD,** National Cancer Institute
**Kathryn Weaver, PhD, MPH,** Wake Forest University

**Justin Trogdon, PhD,** UNC - Chapel Hill
*Cancer, Care cooridnation, and Medication Use for Multiple Chronic Conditions*

**Siran Koroukian, PhD,** Case Western University
*Multimorbidity in Cancer Survivors:  Accounting for more than Chronic Conditions*

**Shawna Hudson, PhD,** Rutgers University
*Multiple Chronic Condition Care Coordination and Cancer Survivorship: A Primary Care Perspective*

9:30 a.m. - 10:00 a.m.

**Break**

10:00 a.m. - 11:30 a.m.
Bayshore 1

**Symposium 2:  Cellular Senescence, Accelerated Aging, Sarcopenia and Frailty:**
The Interaction between Cancer and Aging
Chair: **Bette Caan, DrPH,** Kaiser Permanente Northern California Division of Research

**Marco Demaria, PhD,** European Research Institute for the Biology of Aging (ERIBA)
*Biomarkers of Senescence and their Role in Cancer and Aging*

**Grant R. Williams, MD,** UAB Medical Center
*Assessing Accelerated Aging, Sarcopenia and Frailty in the Oncology Setting*

**Justin C. Brown, PhD,** Pennington Biomedical Research Center
*Harnessing the Anabolic Potential of Exercise and Nutrition to Improve Outcomes for Older Adults with Cancer*

# Agenda

## MONDAY, MARCH 11, 2019 (Cont.)

**11:45 a.m. - 1:00 p.m.**
Bayshore 1

**Lunch Session: Best of Cancer Epidemiology, Biomarkers and Prevention (CEBP)**
(box lunch provided)
Organizer: **Tim Rebbeck, PhD,** Harvard TH Chan School of Public Health & Dana Farber Cancer Institute

**Bette Caan, DrPH,** Kaiser Permanente Northern California Division of Research
*Explaining the Obesity Paradox: The Association between Body Compositition and Colorectal Cancer Survival (C-SCANS Study)*

**Jennifer Moss, PhD,** Penn State Cancer Institute
*Making the Case for Investment in Rural Cancer Control: An Analysis of Rural Cancer Incidence, Mortality, and Funding Trends*

**Renate Winkels, PhD,** Penn State Cancer Institute
*Adherence to the WCRF/AICR Dietary Recommendations for Cancer Prevention and Risk of Cancer in Elderly from Europe and the United States: A Meta-Analysis within the CHANCES Project*

**1:00 p.m. - 2:30 p.m.**
Bayshore 1

**Paper Session 1: Environmental and Molecular Exposures and the Cancer Spectrum**
Chair: **Jeanine Genkinger, PhD,** Columbia University

**Andres Ardisson Korat, ScD,** Harvard University
*A prospective analysis of red blood cell trans fatty acid levels and risk of non-Hodgkin lymphoma*

**Scherezade Mama, DrPH,** Penn State University
*Impact of the built environment on physical activity in rural cancer survivors*

**Alexandra White, PhD,** National Institute of Environmental Health Sciences
*Air pollution, clustering of particulate matter components and breast cancer*

**Renate Winkels, PhD,** Pen State College of Medicine
*Are skeletal muscle mass and density associated with fatigue in early-stage colorectal cancer patients?*

**Ursula Martinez, PhD,** Moffitt Cancer Research Center
*Do Sexual Minorities Differ from Heterosexual Individuals in Smoking and Vaping Characteristics? Findings from a study of dual users of combustible cigarettes and e-cigarettes*

**Julia Butt, PhD,** Duke University
*Smoking, Helicobacter pylori serology, and gastric cancer risk in a consortium of prospective studies from China, Japan, and Korea*

# Agenda

1:00 p.m. - 2:30 p.m.
Bayshore 2

**Paper Session 2: Cancer Screening**
Chair: **Dejana Braithwaite, PhD,** Georgetown University

**Richard Hoffman, MD, MPH,** University of Iowa
*Diagnostic performance of four fecal immunochemical tests for detecting advanced colorectal neoplasia: preliminary results*

**Karen Wernli, PhD,** Kaiser Permanente Washington Health Research Institute
*Trends in breast MRI use among women with BRCA mutations: A national claims analysis 2006-2016*

**Heather Brandt, PhD,** University of South Carolina
*Increasing Colorectal Cancer Screening Rates through Implementation of Evidence-based Interventions with Federally-qualified Health Centers in South Carolina*

**Christopher Cadham, MPH,** Georgetown University
*Systematic Review and Meta-Analysis of Smoking Cessation Interventions for Potential Use in Lung Cancer Screening Settings: 6- and 12-Month Outcomes*

**Serena Rodriguez, PhD, MPH,** University of Texas Southwestern Medical Center
*Delivering cervical cancer screening and follow-up to women with HIV in an integrated safety-net setting*

**Dudith Pierre-Victor, PhD, MPH,** National Cancer Institute
*Prostate Cancer Incidence and Mortality Following a Negative Biopsy in a Screened Cohort*

2:30 p.m. - 3:00 p.m.

**Break**

3:00 p.m. - 4:30 p.m.
Bayshore 1

**Symposium 3:  Point/Counterpoint Debate: Making the Transition from Effectiveness to Implementation Research-Sequential Approaches vs. Hybrid Designs**

Co-Chairs:
**Beth Glenn, PhD,** UCLA Fielding School of Public Health
**Jasmin Tiro, PhD,** UT-South western

**David Chambers, D.Phil, DCCPS**, National Cancer Institute
*Setting the Stage: A Brief Intro to Implementation Science and the Research Pathways to Get There*

**Elizabeth M. Yano, PhD, MSPH,** Director at the HSR&D Center for the Study of Healthcare Innovation, Implementation & Policy at the VA Greater Los Angeles Health System
*The Value of Sequential Designs for Systematically Building the Evidence Base for Successful Implementation and Spread*

**Brian Mittman, PhD,** Kaiser Permanente Southern California
*Hybrid Effectiveness-implementation Research Designs:  Maximizing Production of Evidence and Insights for Cancer Prevention and Control*

4:30 p.m. - 5:30 p.m.
Bayshore 1

**ASPO Business Meeting** (open to all)

5:30 .p.m. - 7:30 p.m.
Bayshore 4-7

**Poster Session and Reception** (cash bar, light appetizers)
*Awards ceremony & poster prizes given at 7:15 p.m.*

7:30 p.m.

**Dinner on your own**

# Agenda

8:00 a.m. - 9:30 a.m.
Palma Ceia 1-3

**Breakfast Session 3: Molecular Epidemiology and the Environment** (continental breakfast provided)
**Challenges and Opportunities for Incorporating Molecular Epidemiology into Cancer Prevention**
Chair: **Katherine Reeves, PhD,** University of Massachusetts

Speakers:
**Gretchen Gierach, PhD, MPH,** NCI/Division of Cancer Epidemiology and Genetics
*"Multi-disciplinary epidemiological approaches to identify molecular markers of cancer risk: breast cancer example"*

**Timothy Rebbeck, PhD,** Harvard T.H. Chan School of Public Health & Dana Farber Cancer Institute
*Investigating the role of genetics in health disparities*

**Shelley Tworoger, PhD,** Moffitt Cancer Center and Research Institute
*Conducting Transdisciplinary and Consortial Research: A Practical Guide*

8:00 a.m. - 9:30 a.m.
Bayshore 2

**Breakfast Session 4 - Combined SIG Breakfast: Behavioral Science & Health Communication**
**Alcohol and Cancer: Risks, Recommendations, Knowledge & Communication**
(continental breakfast provided)
Organizers:
**Lifestyle Behaviors, Energy Balance & Chemoprevention**
Chair: Elisa Bandera, MD, PhD, Rutgers Cancer Institute of New Jersey
**Behavioral Science & Health Communication**
Chair: David Cavallo, PhD, MPH, Case Western Reserve University

Moderator & Discussant: David Cavallo, PhD, MPH, Case Western Reserve University

In collaboration with Health Behaviors Research Branch of the Division of Cancer Control and Population Sciences, National Cancer Institute

**Symposium Description:** This session highlights rapidly evolving developments in understanding the etiology of alcohol and cancer and then focuses on: 1) epidemiology of alcohol and cancer risk and mortality, 2) new recommendations concerning alcohol and cancer, 3) the current lack of public knowledge concerning alcohol use and cancer risk, and 4) challenges to communication concerning uncertainty about risk and the costs and benefits associated with health behaviors. Together these talks suggest a pressing need for communications research across the cancer control continuum addressing alcohol, the cause of ~5% of all cancer mortality worldwide.

**Susan Gapstur, PhD, MPH,** American Cancer Society
*Epidemiology of Alcohol Use and Cancer Risk*
This presentation will discuss historic and recent epidemiologic and biologic evidence that has led to the conclusion that alcohol is a carcinogen and that support international alcohol consumption recommendations.

**Elisa Bandera, MD, PhD,** Rutgers Cancer Institute of New Jersey
*Evolving recommendations concerning alcohol consumption and cancer*
This presentation will discuss the new AICR guidelines for alcohol use and contrast these with past recommendations from several organizations. It will also include a discussion of evidence and gaps highlighted by the recent AICR review.

# Agenda

| | |
|---|---|
| 8:00 a.m. - 9:30 a.m.<br>Bayshore 2 | **Breakfast Session 4 - (Cont.)**<br>Kara Wiseman, PhD, MPH, Division of Cancer Control and Population Sciences, NCI<br>*What Do People Know About Alcohol and Cancer?*<br>Several recent studies have documented widespread lack of knowledge about alcohol and cancer in the U.S., U.K. and Australia. This talk will describe these studies and discuss their implications for cancer control.<br><br>William Klein, PhD, Division of Cancer Control and Populations Sciences, NCI<br>*Challenges in Communication and Decision-Making Regarding Alcohol and Cancer*<br>This presentation will emphasize communication challenges and decision-making related to mixed messages and uncertainty about risk and outcomes. This is highly relevant to alcohol and cancer across the cancer control continuum because of the evidence suggesting both benefits from alcohol for cardiovascular disease and the risk related to cancer. |
| 9:30 a.m. - 10:00 a.m. | Break |
| 9:45 a.m. - 10:00 a.m.<br>Bayshore 1 | ASPO/BCRF Cancer Prevention Research Fellowship Awardee Address<br>Jinani Jayasekera, PhD, Georgetown University<br>*Simulation Modelling of Cancer Clinical Trials – Drawing New Conclusions From Old Trials* |
| 10:00 a.m. - 11:30 a.m.<br>Bayshore 1 | **Symposium 4:  Innovative Strategies for Enhancing Participant Engagement, Intervention Delivery and Data Collection**<br>Co-Chairs: Erin Kobetz, PhD, MPH, University of Miami<br>Jerod Stapleton, PhD, Rutgers Cancer Institute of New Jersey<br><br>Valerie Myers, PhD, Klein Buendel, Inc.<br>*Technology and Health Behavior:  Crossing the Digital Divide*<br><br>Carmina G. Valle, PhD, MPH, University of North Carolina - Chapel Hill,<br>*Digital Health Interventions to Promote Physical Activity and Weight Management among Cancer Survivors*<br><br>Ellen Baker, MD, University of Texas M.D. Anderson Cancer Center, Director of Cervical Cancer Prevention<br>*Project ECHO Telementoring to Improve Cancer Prevention and Care in Resource Limited Settings* |
| 11:30 a.m. - 1:00 p.m.<br>Palma Ceia 2 | **Concurrent Lunch Sessions** (box lunch provided)<br>**Lunch session 1:** Early career investigators - NCI Session on Career Development Awards |
| Palma Ceia 3-4 | **Lunch session 2:** Late early career investigators - *"How do I get there from here? Preparing for Promotion and Tenure"*<br>Chair: Theresa Hastert, PhD, Karmanos Cancer Institute |
| Palma Ceia 1 | **Lunch session 3:** Mid- to senior investigators - *"Should I stay or should I go? Negotiating a Change in Institutions"*<br>Chair: Jasmin Tiro, PhD, University of Texas Southwestern Medical Center |

# Agenda

## TUESDAY, MARCH 12, 2019

1:15 p.m. - 2:45 p.m.
Bayshore 1

**Paper Session 3: Methodologic Innovation in Cancer Research**
Chair: Clement Gwede, PhD, MPH, RN, Moffit Cancer Research Center

Oluwole Babatunde, MBBS, MPH, University of South Carolina
*A comparison of Mortality-to-Incidence ratio with survival analyses in assessing racial breast cancer disparities across South Carolina Counties.*

Sunny Jung Kim, PhD, MS, MA, Virginia Commonwealth University
*Detecting effective tobacco control messages via Linguistic Analysis and Item Response Theory*

Amy Leader,DrPH, MPH, Thomas Jefferson University
*Recruiting for an Online Survey through Social Media:  Testing Variations in Messaging, Compensation, and Platform*

Linda Fleisher, PhD, MPH, Fox Chase Cancer Center
*Reducing Cancer Health Disparities by Engaging Underrepresented Researchers (UR) in Cancer Research: Strategies Utilized for Recruitment and Retention in the Geographic Management of Cancer Health Disparities Program (GMaP) Region 4*

Jennifer LeLaurin, MPH, University of Florida
*Clinical Documentation of Tobacco Use in Pediatric Practice: Challenges and Opportunities*

Sandi Pruitt, PhD, University of Texas Southwestern Medical Center
*Machine Learning to Predict Follow-up for Abnormal Cervical Cancer Screening using Electronic Health Record Data: Model Development and Validation*

1:15 p.m. - 2:45 p.m.
Bayshore 2

**Paper Session 4: Cancer Survivorship and Caregiver Health**
Chair: Hazel Nichols, PhD, University of North Carolina

Hoda Badr, PhD, Baylor College of Medicine
*Results of A Randomized Pilot Trial of SHARE: A Self-Management Intervention for Head and Neck Cancer Patients Undergoing Radiotherapy and their Spousal Caregivers*

Betelihem Getachew, MPH, Emory University
*A Hope-based Intervention to Address Disrupted Goal Pursuits and Quality of Life in Young Adult Cancer Survivors*

Anne Kirchhoff, PhD, MPH, University of Utah
*Caregiver intention to restart vaccinations after childhood cancer treatment*

Dannielle Kelley, PhD, MPH, National Cancer Institute
*Longitudinal dyadic associations between perceived social support and cancer patient and caregiver health: An Actor-Partner Interdependence modeling approach*

Christina Dieli-Conwright, PhD, MPH, University of Southern California
*Ethnicity as a Moderator of the Effects of Aerobic and Resistance Exercise on Inflammatory Biomarkers in Breast Cancer Survivors*

Paige Lake, MPH, University of South Florida
*"It's a prescription, not an addiction": Exploring health care provider and advocate perceptions of opioid use among cancer survivors*

2:45 p.m.

Conference Concludes

## Session 1: Environmental and Molecular Exposures and the Cancer Spectrum
Monday, March 11, 1:00-2:30 p.m.

### A prospective analysis of red blood cell trans fatty acid levels and risk of non-Hodgkin lymphoma

Ardisson Korat AV , Chiu YH, Bertrand KS, Zhang S, Laden F, Epstein MM, Rosner BA, Chiuve S, Campos H, Giovannucci EL, Chavarro JE, Birmann BM
Presenter: Andres Ardisson Korat, ScD, Harvard University

Purpose of the study: To confirm previous reports of increased non-Hodgkin lymphoma (NHL) risk with higher intake of dietary trans fatty acids (TFA), we conducted the first prospective study of pre-diagnosis red blood cell (RBC) TFA levels and risk of NHL and common NHL histologic subtypes (diffuse large-B cell lymphoma (DLBCL), follicular lymphoma, chronic lymphocytic lymphoma/small lymphocytic leukemia, other B-cell NHL, T-cell NHL). Methods: We conducted a nested case-control study in Nurses'Health Study (NHS) and Health Professionals Follow-Up Study (HPFS) participants with archived RBC specimens and no history of cancer at sample collection (NHS: 1989-90; HPFS: 1994-5). We confirmed 583 NHL cases (332 women in NHS, 251 men in HPFS) and matched 583 controls by cohort (sex), age, race/ethnicity and blood draw date/time. We analyzed RBC TFAs using gas-liquid chromatography; individual TFA levels were expressed as a percentage of total fatty acids. We used unconditional logistic regression, adjusted for the matching factors, to estimate odds ratios (OR) and 95% confidence intervals (CI) for overall NHL risk per 1 standard deviation (SD) unit increase in TFA level. We fitted multivariate polytomous logistic regression models to assess associations for the specific subtypes listed above. Results: Total and individual RBC TFAs were not associated with overall NHL risk or risk of most histologic subtypes. However, we observed a positive association of total RBC TFA with DLBCL risk (n=86 cases; OR [95% CI] per 1 SD: 1.29 [1.02, 1.64]), driven primarily by 18:1 TFAs (1.35 [1.07, 1.72]). Among 18:1 TFA isomers, we found a positive association for trans 18:1 n-9 (elaidic acid; 1.33 [1.05, 1.68]) but not for other isomers. Conclusions: We observed significant positive associations for RBC TFA levels with DLBCL risk. These findings are consistent with published studies of self-reported TFA intake; further, previous studies have shown that TFA levels -- particularly trans 18:1n-9, which is industrially-derived -- are positively correlated with biomarkers of inflammation and immune activation, supporting the biologic plausibility of our findings. Food industry and public health measures to diminish TFA intake may help to reduce risk of NHL, and particularly of DLBCL.

### Impact of the built environment on physical activity in rural cancer survivors

Mama SK, Bhuiyan N, Lengerich EJ, Schmitz KH
Presenter: Scherezade Mama, DrPH, Penn State University

Purpose: Cancer survivors (CS) residing in rural areas are less likely to meet physical activity (PA) recommendations and are more likely to report poor health than those residing in urban areas. Ecologic models suggest that the built environment affects PA, thereby influencing cancer survivorship. The purpose of this study was to examine the impact of the home and neighborhood environment on PA in rural CS. Methods: CS were recruited to a cross-sectional study to explore factors related to PA in CS in central Pennsylvania. Participants completed questionnaires assessing sociodemographics, the home environment for exercise, perceived neighborhood environment, walkability, and PA. Logistic regression models were used to examine the associations between environmental correlates and the likelihood of meeting PA recommendations ( 150 minutes of moderate-to- vigorous intensity PA). Results: CS (n=258) completed a brief demographic questionnaire, and 215 (83.3%) participants opted to complete a more in-depth questionnaire assessing the environment and PA. Nearly half of participants were prostate (21.9%) or breast (21.9%) CS, and 21.9% of participants reported multiple cancer diagnoses. Participants were mostly women (59.1%), in their mid-60s (M age=64.7±12.0 years), overweight (M BMI=29.7±6.8 kg/m^2), and self-rated their health as good or better (84.3%). Over half (62.0%) of CS reported meeting PA recommendations. More equipment in the home for exercise (OR=1.3, 95% CI: 1.1-1.6) and greater environmental support for PA (OR=1.3, 95% CI: 1.1-1.6) were associated with a higher likelihood of meeting PA recommendations, after adjusting for age, gender, income, BMI, and cancer type. In the adjusted multivariate model, meeting PA recommendations was associated with lower street connectivity (OR=0.5, 95% CI: 0.2-1.0), higher neighborhood aesthetics (OR=2.8, 95% CI: 1.1-7.1), and the home environment (OR=1.3, 95% CI: 1.1-1.6). Conclusions: Findings suggest that the home and neighborhood environment impact PA in rural CS and point to the need for interventions designed to meet the unique built environmental needs of rural CS in an effort to increase PA, improve cancer survivorship outcomes, and reduce cancer health disparities.

## Session 1: Environmental and Molecular Exposures and the Cancer Spectrum
Monday, March 11, 1:00-2:30 p.m. (Cont.)

### Air pollution, clustering of particulate matter components and breast cancer

White AJ, Keller JP, Zhao S, Kaufman JD, Sandler DP
Presenter: **Alexandra White, PhD,** National Institute of Environmental Health Sciences

Purpose. To evaluate the relationship between air pollution, particulate matter (PM) components and breast cancer risk in a U.S.-wide prospective cohort. Methods. We estimated annual average ambient outdoor residential levels of PM2.5, PM10 and NO2 using a land- use regression model for 49,533 Sister Study participants (breast cancer-free women with a sister with breast cancer) living in the contiguous U.S. Predictive k¬-means was used to assign participants to clusters defined by PM2.5 components profile to evaluate the impact of heterogeneity in the air pollution mixture. Participants were also separately clustered by geographic region, without regard to air pollution mixture. Cox proportional hazards regression was used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for invasive breast cancer risk associated with an interquartile range (IQR) increase in pollutants (PM2.5: 3.6 µg/m3, PM10: 5.8 µg/m3, NO2: 5.8 parts per billion (ppb)). For PM2.5, the association was stratified by component cluster membership. Results. During follow-up (mean=8.4 years), 2,349 invasive cases were identified. There was little to no increase in risk for invasive breast cancer overall in relation to these air pollutants. However, we observed a higher risk of invasive breast cancer associated with an IQR increase in PM2.5 (HR IQR=1.15, 95% CI 1.03- 1.28), PM10 (HRIQR=1.05, 95% CI 0.99- 1.11) and NO2 (HRIQR=1.10, 95% CI 1.10- 1.21) for women in the Western U.S. Associations also varied by clusters derived from PM2.5 component profiles. PM2.5 was associated with a 28% higher risk of invasive breast cancer (95% CI: 1.00- 1.64) in a California-based cluster characterized by low sulfur fractions and high fractions of sodium and nitrate. An elevated, although less precise, risk was observed for another Western U.S. cluster (HR=1.63, 95% CI: 0.92-2.88), characterized by high fractions of Si, Ca, K and Al. Conclusions. Air pollution measures were related to invasive breast cancer for certain subgroups of women, defined by geographic region and PM component profiles. Particulate matter (PM) is a complex mixture and consideration of geographic variability and mixture components may impact observed associations with breast cancer.

### Are skeletal muscle mass and density associated with fatigue in early-stage colorectal cancer patients?

Winkels RM, van Baar H, Beijer S, Kampman E
Presenter: **Renate Winkels, PhD,** Pen State College of Medicine

Background: Both low skeletal muscle mass and low radiographic muscle density are associated with higher complication rates after surgery for colorectal cancer and with worse survival rates although data are not fully consistent. Whether skeletal muscle mass and density are also associated with patient-reported outcomes, such as fatigue, is less well studied. We hypothesized that low skeletal muscle mass and density may be associated with fatigue in early stage colorectal cancer (CRC) patients. Methods: Within a prospective cohort of 594 early-stage (stage I-III) CRC patients, we collected information on fatigue using the EORTC QLQ-C30 questionnaire 6 months after diagnosis; fatigue was defined as a score of >39 based on literature. Skeletal muscle mass and -density were assessed using pre-operative Computed Tomography (CT) images. Low muscle mass and density were identified using previously determined cut- off values. Cox regression models were used to calculate prevalence ratios (PRs). All PRs were adjusted for age, sex, stage of disease. Results: The average age of the study population was 65.7 ± 9.0; 37% were women and 67% of the patients had a tumor located in the colon. Low muscle mass was present in 26% of the patients and low muscle density in 25%; 26% of patients had fatigue. Low muscle mass was not associated with prevalence of fatigue (PR for low versus normal muscle mass 0.83 (95%CI 0.56- 1.24). Low muscle density was associated with higher prevalence of fatigue: PR for low versus normal muscle density 1.94 (95% CI 1.34-2.81). Conclusion: Among colorectal cancer patients, low skeletal muscle density at diagnosis - indicative for fat infiltration in the muscle- was associated with a higher prevalence of fatigue six months after diagnosis. Future studies should assess how lifestyle interventions can help to prevent or decrease fatigue, and should further clarify whether there is a causal link between fat infiltration in the muscle and fatigue.

Session 1: Environmental and Molecular Exposures and the Cancer Spectrum
Monday, March 11, 1:00-2:30 p.m. (Cont.)

## Do Sexual Minorities Differ from Heterosexual Individuals in Smoking and Vaping Characteristics? Findings from a study of dual users of combustible cigarettes and e-cigarettes

Martinez U, Simmons VN, Quinn GP, Brandon KO, & Brandon TH
Presenter: **Ursula Martinez, PhD,** Moffitt Cancer Research Center

Cancer health disparities exist among sexual minorities. Higher smoking rates among lesbian, gay, and bisexual (LGB) individuals compared to heterosexual individuals may contribute to the health disparities. Research also indicates LGB individuals have a higher prevalence of use of electronic cigarettes (e-cigarettes). Studies with the general population indicate individuals are using e-cigarettes mainly to assist with quitting or reducing combustible cigarette smoking. However, there is scarce information about motivations and patterns of e-cigarette use in the LGB population as well as how vaping impacts their combustible smoking behavior. In this study, we used baseline data from an ongoing smoking cessation trial for dual users of combustible and e-cigarettes to compare LGB (n=478) and heterosexuals (n=2,418) on smoking and vaping characteristics, reasons to start vaping, motivation to quit smoking, and changes in smoking and nicotine dependence (measured with Heaviness of Smoking Index) from pre-to-post-vaping. Results indicated that, although LGB individuals had a shorter history of smoking than heterosexuals (M=11.7, SD=25.2 vs. M=13.4, SD=11.3 years smoking; t=2.24, p<.05; d=-0.09) and lower nicotine dependence (M=3.3, S=1.6 vs. M=3.6, SD=1.5) (t=4.18, p<.001; d=-0.19), they reported significantly less reduction from pre-to-post-vaping in both the number of combustible cigarettes smoked per day (M=6.5, SD=8.6 vs. M=8.4, SD=9.5) (t=4.259, p<.001; d=-0.21) and nicotine dependence level (M=1.2, SD=1.6 vs. M=1.5, SD=1.7) (t=3.26, p<.01; d=-0.18). Regarding reasons for use, LGB individuals were more likely to start vaping as a substitute for combustible cigarettes in places where smoking is forbidden (13.0% vs. 8.9%), whereas heterosexual individuals were more likely to start vaping to quit smoking (40.9% vs. 46.5%) (β‡2=13.92, p < .05; Cramer's V=0.07, p=0.03). Finally, LGB individuals were less motivated to quit smoking compared to heterosexual individuals (M=5.4, SD=2.4 vs. M=5.8, SD=2.4) (t=2.96, p<.01; d=-0.17). Overall, the present findings indicate smoking and vaping characteristics differ between LGB and heterosexuals and suggest the LGB population may be at greater risk of maintaining dual use of combustible and e-cigarettes.

## Smoking, Helicobacter pylori serology, and gastric cancer risk in a consortium of prospective studies from China, Japan, and Korea

Butt J, Varga MG, Wang T, Tsugane S, Shimazu T, Zheng W, Abnet CC, Yoo KY, Park SK, Kim J, Jee SH, Qiao YI, Shu XO, Waterboer T, Epplein M
Presenter: **Julia Butt, PhD,** Duke University

Purpose: Tobacco smoking is considered as a risk factor for the development of gastric cancer (GC). We here aim to assess the association of smoking with GC risk in 1,446 non-cardia GC cases and 1,796 matched controls from the Helicobacter pylori (H. pylori) Biomarker Cohort Consortium with samples from China, Japan, and Korea. Since H. pylori is the leading causal factor for GC we address this question considering H. pylori infection as a potential confounder or effect modifier. Methods: We applied logistic regression models stratified by study and adjusting for age, sex and BMI to calculate odds ratios (OR) and 95% confidence intervals (95% CI) for the association of smoking (never, former, current) with GC risk. Overall H. pylori sero-positivity as well as sero-positivity to the H. pylori GC biomarker HP0305/OMP were applied to the model as potential confounders. Second, the association of smoking with GC risk was determined with stratification by overall H. pylori or HP0305/OMP sero-status to assess potential effect modification. Results: Current smoking was significantly associated with GC risk (OR: 1.21, 95% CI: 1.02-1.44). Adjustment for overall H. pylori sero-positivity did not substantially alter the overall OR (OR: 1.30, 95% CI: 1.04-1.62) but the association lost significance when adjusting for HP0305/OMP sero-positivity (OR: 1.23, 95% CI: 0.98-1.53). Stratifying by overall H. pylori sero-positivity revealed that current smoking only increased GC risk among H. pylori sero-positive (OR: 1.35, 95% CI: 1.07-1.71) but not sero-negative individuals (OR: 0.78, 95% CI: 0.39-1.56), however, there was no significant interaction (p-value = 0.335). Stratification by the GC associated biomarker HP0305/OMP sero-positivity, in contrast, showed a significant interaction (p-value = 0.005) with a significant 42% increased risk of GC among HP0305/OMP sero-positive current smokers (95% CI: 1.07-1.89). Conclusion: In conclusion, we confirmed previous findings that smoking is associated with an increased GC risk. However, taking into consideration the H. pylori GC biomarker HP0305/OMP sero-status, current smoking increases GC risk only among individuals that are simultaneously sero-positive for the leading causal factor for GC, H. pylori.

## Session 2: Cancer Screening and Surveillance
Monday, March 11, 1:00-2:30 p.m.

**Diagnostic performance of four fecal immunochemical tests for detecting advanced colorectal neoplasia: preliminary results**

Levy BT, Hoffman RM, Daly JM, Xu Y, Crockett SD, Shokar NK, Dawson JD, Reuland DS, Zuckerman MJ, Levin AD
Presenter: **Richard Hoffman, MD, MPH,** University of Iowa

Background. Screening programs based on fecal blood testing have been shown in randomized controlled trials to reduce colorectal cancer incidence and mortality. Professional organizations highly recommend screening average-risk patients with fecal immunochemical testing (FIT). Many patients find these stool tests more acceptable than colonoscopy and stool testing may be the preferred option for areas with limited endoscopic resources. However, the diagnostic performance of FIT testing, particularly for CLIA-waived point-of-care (POC) tests, has not been well studied. Purpose. We are comparing the diagnostic accuracy of 4 FIT tests, one automated (AUTO) and 3 POC, for detecting advanced neoplasia (advanced adenomas and carcinomas) using colonoscopy as a gold standard. Methods. We are enrolling subjects ages 50 to 85 at 3 academic medical centers in Iowa, Texas, and North Carolina who were scheduled for a screening or surveillance colonoscopy. Each subject completed 4 different FIT tests on a single stool specimen. Based on colonoscopy results, we calculated sensitivity, specificity, and predictive values. We used PROC GLIMMIX models in SAS to compare sensitivity and specificity across the different tests, accounting for the within-patient correlation. Results. We currently have 641 subjects who completed FIT and colonoscopy. Mean age is 61.2 ($\pm$7.5) years, 63% women, 63% non-Hispanic white, and 31% Hispanic. We found advanced neoplasia, including 5 carcinomas, in 68 subjects. The sensitivities for detecting these neoplasia were 3%, 22%, 28%, and 16% (AUTO), respectively. Corresponding positive predictive values were 18%, 21%, 33%, and 24% (AUTO). Specificities was 97%, 89%, 90%, and 94% (AUTO), respectively, and corresponding negative predictive values were 89%, 91%, 92%, and 90% (AUTO). We found statistically significant differences in sensitivity (P < 0.01) and specificity (P < 0.01) across tests. Conclusions. Early data suggest that FIT products may vary in their sensitivity and specificity for detecting advanced colorectal neoplasia. This variability could have important impacts on the effectiveness of efforts to limit the burden of colorectal cancer by increasing population-based screening rates through fecal blood testing.

**Trends in breast MRI use among women with BRCA mutations: A national claims analysis 2006-2016**

Wernli KJ, Callaway KA, Henderson LM, Kerlikowske K, Lee JM, Ross-Degnan D, Wallace JK, Wharam JF, Zhang F, Stout NK
Presenter: **Karen Wernli, PhD,** Kaiser Permanente Washington Health Research Institute

Objective: Women with BRCA mutations are recommended to receive breast MRI as an adjunct to annual mammography for breast cancer screening however adoption of these guidelines is unclear. We estimated breast MRI use from 2006-2016 among insured US women to understand use over time. Methods: Using medical care claims, we conducted a cohort study of breast MRI use in commercially-insured women aged 20-64 years continuously enrolled for 1 year in a large national insurer between 2006-2016. Women were identified as BCRA mutation carriers without a personal history of breast cancer using ICD9/10 diagnosis codes. We used CPT codes to identify breast MRIs and developed claims-based algorithms to categorized MRI indication as: screening, diagnostic or other. We calculated annual age-specific and age-adjusted rates of use overall and by indication among BCRA mutation carrier women. We used autoregressive time series models to estimate the yearly trend. Results: We identified 12,457 women with BRCA mutations during the study period. Breast MRI use overall among BRCA+ women aged 20-64 was 49/1000 women in 2006 and increased on average by 11 MRIs per year to a rate of 178/1000 in 2016 (p<0.001). Across this time period, use for screening accounted for over 80% of breast MRIs and rates mirrored the overall trend with a 4.8-fold increase from 32/1000 in 2006 to 156/1000 women by 2016. Over the same time period, use of breast MRI for diagnostic workup or other indications remained stable. Use of screening breast MRI was highest among older women aged 50-64 compared with women <40 and 40-49 years (in 2016, 189, 201, and 100/1000, respectively) Discussion: Breast MRI screening increased dramatically over the past decade in women with BRCA mutations concordant with clinical guidelines. Additional research is needed to understand use of breast imaging relative to health outcomes for this high-risk population.

## Session 2: Cancer Screening and Surveillance
Monday, March 11, 1:00-2:30 p.m. (Cont.)

### Increasing Colorectal Cancer Screening Rates through Implementation of Evidence-based Interventions with Federally-qualified Health Centers in South Carolina

Brandt HM, Johnson H, Calef C, Outing R, Hale K, Workman L
Presenter: **Heather Brandt, PhD,** University of South Carolina

Purpose: The purpose of the study is to implement evidence-based interventions (EBIs) to increase colorectal cancer screening (CRCS) with federally-qualified health centers (FQHCs) to aid in prevention and early detection of colorectal cancer among average risk individuals. Methods: The Colorectal Cancer Screening Program in South Carolina (CCSPSC) works with eight FQHC systems in South Carolina and several partners, including the American Cancer Society, South Carolina Primary Health Care Association, and Colorectal Cancer Prevention Network, to implement at least two priority EBIs (provider assessment and feedback, provider reminders and recall, client/patient reminders), supportive strategies (professional education, small media), and additional activities (standard procedures, 80% by 2018 pledge) with a goal of increasing CRCS rates by at least 5% annually. An adaptive, iterative, and phased approach is used to implement EBIs. Quarterly and annual CRCS data are submitted to track outcomes. Results: Three years of CRCS data have been collected to date. From 2015 to 2017, an average increase of 18% (33% to 51%) in CRCS was observed in the eight FQHCs with which the CCSPSC worked. During this period, the state average showed an average increase of 6% and 4% nationally in CRSC among FQHCs. From 2016 to 2017, an average increase of 11% (36% to 47%) in CRCS was observed in the 13 FQHCs with which the CCSPSC worked. During this period, the state average showed an increase of 5% and 2% nationally in CRCS among FQHCs. Additional data on implementation processes show high quality implementation across partner FQHCs. Conclusions: The CCSPSC has demonstrated increases in CRCS as a result of partnered implementation of EBIs with FQHCs that outpace state and national averages during the same time periods. The program is in its fourth year focused on sustainability and maintenance of CRCS outcomes and enhanced implementation processes to inform replication and scalability.

### Systematic Review and Meta-Analysis of Smoking Cessation Interventions for Potential Use in Lung Cancer Screening Settings: 6- and 12-Month Outcomes

Cadham CJ, Jayasekera JC, Advani SM, Taylor KL, Fallon SJ, Stephens JL, Braithwaite D, Jeon J, Cao P, Meza R, Levy D, Mandelblatt JS
Presenter: **Christopher Cadham, MPH,** Georgetown University

Purpose: The Centers for Medicare and Medicaid Services mandate smoking cessation interventions for individuals at high-risk of lung cancer attending lung screening. These individuals include smokers between ages of 55-77 with >30 pack year history of smoking. However, there is limited evidence on cessation intervention effects in this setting. To address this, we conducted a systematic review and meta-analysis of smoking cessation interventions with potential for use in the setting of lung cancer screening. Methods: We searched Medline, PubMed, and PsycINFO for randomized controlled trials of smoking cessation interventions from 2010-2018. We included trials with participants ages 50+ and heavy smokers. The primary outcome was self-reported or biochemically verified 7-day point prevalence abstinence at 6-months; we also examined 12-month abstinence. Interventions were grouped based on their primary focus: pharmacotherapy, telephone counseling, in-person counseling and electronic/web-based smoking cessation; however, most interventions were multi-modality. Random effects models were used to estimate pooled effect sizes by intervention category. Results: Of the 3814 potentially eligible studies, the final sample included 84 trials (74 with 6- month outcomes; 39 with 12-month outcomes). At 6-months, use of pharmacotherapy (odds ratio [OR] 1.53, 95% CI 1.33-1.77), electronic/web-based (OR 1.14, 95% CI 1.03-1.27), in- person counseling (OR 1.44, 95% CI 1.24-1.67), and telephone counseling (OR 1.20, 95% CI 1.00-1.45) all increased the odds of abstinence. However, at 12-months, only pharmacotherapy (OR=1.46, 95% CI 1.17-1.84) and in-person counseling (OR=1.26, 95% CI 1.06-1.48) remained effective. Telephone counseling and electronic/web-based interventions were no longer effective at 12-months (OR 1.08, 95% CI 0.95-1.24 and OR 1.02, 95% CI 0.89-1.18, respectively). Conclusions: Several categories of interventions appear to be effective at increasing cessation rates among individuals that may be eligible for lung cancer screening, but long-term effectiveness is unclear. Decisions about which strategies to implement should consider results of NCI's ongoing SCALE trials in lung screening populations, as well as feasibility, costs, and impact on population mortality.

## Session 2: Cancer Screening and Surveillance
Monday, March 11, 1:00-2:30 p.m. (Cont.)

### Delivering cervical cancer screening and follow-up to women with HIV in an integrated safety-net setting

Rodriguez SA, Betts A, Higashi R, Luque A, Wernder C, Chavez C, Lee SC, Tiro JA, Barnes A
Presenter: Serena Rodriguez, PhD, MPH, University of Texas Southwestern Medical Center

Background: Women with HIV are at elevated risk of cervical cancer compared to women without HIV. Preliminary studies in our safety-net setting showed 56% of women with HIV are under-screened for cervical cancer. Of those screened, only 40% completed follow- up colposcopies within 6 months when indicated. This study developed process maps to 1) illustrate patient flow, provider and clinic staff inputs, and gaps in cervical cancer screening and follow-up for women with HIV; and 2) identify quality improvement intervention opportunities to optimize screening and follow-up care. Methods: We conducted interviews with providers and staff in HIV primary care and gynecology specialty clinics. Topics included screening and follow-up processes; provider- and staff- patient communication; patient transition between clinics; perceptions of barriers to screening and follow-up; and suggestions for improvements. We double coded interviews with three deductively driven codes: care processes; barriers to care; and opportunities for interventions. We reviewed coded excerpts and findings biweekly to iteratively inform process map development, and we presented drafts to clinic stakeholders and patients for refinement. Results: Process maps highlighted gaps in care for women with HIV. Gaps included: 1) limitations in electronic health records (EHR) data to identify and track patients overdue for screening/follow-up; 2) logistical issues (e.g., scheduling, staffing); 3) inconsistent communication between clinics; 4) primary care provider discomfort performing Pap tests; and 5) clinic flow not optimized for all providers to perform Pap tests. Intervention opportunities included adaptation of EHR documentation and reporting systems and development of a surveillance registry to identify/track women overdue for a Pap test/follow-up. Conclusion: We identified disparities in care for women living with HIV within our integrated safety-net healthcare system including system-level gaps as patients interfaced with multiple teams moving from primary care to specialty care following abnormal Pap results. Addressing these gaps with quality improvement interventions is critically important for this subpopulation of women at increased risk of cervical dysplasia and cancer.

### Prostate Cancer Incidence and Mortality Following a Negative Biopsy in a Screened

Cohort  Pierre-Victor, D., Parnes, H., and Pinsky, PF
Presenter: Dudith Pierre-Victor, PhD, MPH, National Cancer Institute

Purpose: To estimate prostate cancer (PCa) incidence and mortality following a negative biopsy for prostate cancer in a cohort of men undergoing prostate cancer screening. Methods: The Prostate, Lung, Colorectal and Ovarian (PLCO) cancer screening trial randomized participants 55-74 years to an intervention versus control arm. Intervention arm men received annual prostate-specific antigen (PSA) tests for 6 years and annual digital rectal exams (DRE) for 4 years. We examined the cohort of men with a positive PSA ($>$ 4 ng/ml) or DRE screen followed within one year by a negative biopsy, defined as a biopsy with no PCa diagnosis within 90 days. PCa incidence and mortality rates in this cohort from the time of first negative biopsy were analyzed as a function of PSA level at biopsy and other factors such as age and race. Cumulative incidence and mortality probabilities were derived using Kaplan-Meier curves. Multivariate proportional hazards regression was utilized to estimate hazard ratios (HRs) of PCa death by PSA level, controlling for age and race. Results: The cohort included 3215 men. Median (25th/75th) age at biopsy was 65 (61/69) years; biopsies occurred between 1994-2006. Median follow-up time was 15.0 years. By PSA level, 31%, 43%, 14% and 6% were $<$4, 4-7, 7-10 and $>$10 ng/ml, respectively (5% unknown). A total of 824 PCa cases were diagnosed. The 20-year probability of PCa diagnosis following a negative biopsy was 30.2% (95% CI: 28.4-33.2). By PSA level, 20-year PCa cumulative incidence probabilities were 14.8% ($<$4), 36.9% (4-7), 38.2% (7-10) and 45.2% ($>$10). There were 38 PCa deaths. The overall cumulative probability of PCa death at 20 years was 1.97% (95% CI: 1.2-2.7%). By PSA level, 20-year PCA death probabilities were 1.53% ($<$4), 1.62% (4-7), 2.92% (7-10) and 4.62% ($>$10). Compared to men with PSA of 4-7 ng/ml, those with levels of $<$4, 7-10 and $>$10 had HRs for PCa mortality of 0.75 (95% CI: 0.3-1.8), 1.4 (95% CI: 0.6-3.5) and 3.0 (95% CI: 1.2-7.3), respectively. Per 5 ng/ml increase in PSA, the HR for PCa mortality was 1.44 (p=0.01). Conclusions: The mortality rate from prostate cancer following a negative biopsy is low through 20 years of follow-up, particularly among men with PSA levels $<$10 ng/ml.

Session 3: Methodologic Innovation in Cancer Research
Tuesday, March 12, 1:15-2:45 p.m.

## A comparison of Mortality-to-Incidence ratio with survival analyses in assessing racial breast cancer disparities across South Carolina Counties

Babatunde O, Arp Adams S, Eberth JM, Zahnd WE, Felder TM, Moran R and Hebert JR
Presenter: **Oluwole Babatunde, MBBS, MPH,** University of South Carolina

Purpose: The mortality-to-incidence rate ratio (MIR) provides a population-based measure of survival which accounts for incidence. The use of MIR as a surveillance tool has shown that South Carolina (SC) exhibits more extreme racial differences in cancer incidence, mortality and MIR than other states or the nation. We assessed the effectiveness of MIR as a proxy for 5-year survival time (5YST) among breast cancer (BrCa) patients in South Carolina. Methods: The 5YST was computed from data on BrCA cases which were obtained retrospectively from the SC Central Cancer Registry from 2002 to 2010. The MIR was computed from Cancer incidence and mortality data which were obtained from the SC Community Access Network (SCAN). The underlying data for SCAN were generated from the SC Central Cancer Registry and SC DHEC Vital Records and used to construct MIRs. ArcGIS 10.2 was utilized to map BrCA MIRs by race for 46 counties within SC. Seven categories of MIR were derived using the national MIR for BrCA as reference. 5YST was computed for all BrCA cases in each county utilizing SAS software and this was mapped with MIR per county. Exploratory and geographically weighted regression analyses were conducted in ArcGIS to determine the relationship between MIR and MST. Results: A total of 2155 breast cancer patients (nWhites=1557/72%; nBlacks= 598/28%) were reported in the study period. A visual inspection of the MIR maps by race showed that Blacks were in the highest MIR category while the MIR by 5YST map showed that higher MIR was likely associated with lower 5YST. By contrast, the MIRs for Whites were more evenly represented over the seven categories. Overall, the 5YST was 92.8% among blacks and 95.6% among whites. Assessment of MIR with MST in ArcGIS utilizing exploratory ArcGIS regression showed that there was statistically significant Global Moran's I p value indicative of clustering. Conclusions: The MIR proved useful for identifying disparities in BrCA incidence and mortality among Black and White women in SC. Cancer surveillance programs may use the MIR to monitor disparities across racial/ethnic groups and geographic regions going forward. MIRs have the potential to serve as an indicator of the long-term success of cancer surveillance programs.

## Detecting effective tobacco control messages via Linguistic Analysis and Item Response Theory

Kim SJ and Fuemmeler BF
Presenter: **Sunny Jung Kim, PhD, MS, MA,** Virginia Commonwealth University

Introduction: Current health communication research on tobacco control often examines the persuasion effects of messages in an experimental setting, which produces small effect sizes and limits the external validity of how well the tested messages will perform in real word settings. In the new media landscape, (anti)smoking and (anti)vaping messages are posted, shared, and disseminated across media platforms by a broader set of users. Tracking the persuasion effects of each message can be challenging with the experimental approaches. Novel analytic methods are needed to evaluate the effective strategies for tobacco control communication. We apply linguistic analysis and item-response theory to antismoking/antivaping messages to detect their persuasion effects on cognitive and emotional outcomes at an individual message level. Methods: We recruited respondents from social media and crowdsourcing platforms (n=6,566). The eligible current smokers were randomly assigned to one of the 80 antismoking and antivaping messages, or 16 food advertisements (the control group). We measured attitudes toward vaping/smoking, emotional arousal, and intention to quit smoking or vape. We mined text data from each stimulus message to examine their linguistic characteristics and its links to the persuasion outcomes. Results: Majority of participants were White (86%) and female (55%). Antismoking messages were more likely to reveal anxiety (p=.01) and dangers or concerns (p<.01), compared to the control messages; and express high expertise and confidence compared to antivaping messages (p=.04). We report linguistic properties of each message and their relationship to antismoking attitudes, emotional arousal, intention to quit cigarettes, and intention to vape. Visualized patterns of message effectiveness demonstrate text/image-based antivaping messages, compared to video-based antivaping messages, unintentionally increased participants' favorable attitudes toward e-cigarettes. Conclusions: These message-level analyses can help identify best candidate messages that generate positive persuasion outcomes, which, in turn, can inform the selection of messages for health education and campaigns.

## Session 3: Methodologic Innovation in Cancer Research
## Tuesday, March 12, 1:15-2:45 p.m. (Cont.)

### Recruiting for an Online Survey through Social Media: Testing Variations in Messaging, Compensation, and Platform

Selvan P, Kearney M, Massey PM, Leader AE
Presenter: **Amy Leader, DrPH, MPH,** Thomas Jefferson University

Objective: To test three recruitment strategies for parents on social media (Facebook and Twitter) to complete a brief survey about the human papillomavirus (HPV) vaccine. Methods: We created three campaigns with ads on Facebook and promoted tweets on Twitter that invited parents of children ages 9-15 to complete a brief survey about the HPV vaccine. Iterative, yet varied, campaigns were conducted to determine the ideal social media platform, compensation amount, and messaging. Ads depicted vaccine-eligible children (11-12 years of age) of various ethnicities. Ad messaging was adapted from social media toolkits at the CDC and the HPV Roundtable. Parents who clicked on our ad were first screened for eligibility. Those who were eligible then completed a 20-item survey via Qualtrics that included questions about HPV, the vaccine, and social media use. Survey compensation was either $5 or $10. At the end of the survey, we provided information about HPV and the vaccine. The campaign was available in English and Spanish. Results: The first campaign was launched on both Facebook and Twitter and offered $5 compensation. The Facebook component yielded 18,527 impressions; two adults were confirmed eligible by the screener and both completed the survey (100% screener to completion rate). Cost per survey was $349.45. The Twitter component received 143,661 impressions and yielded 18 completed surveys, with a screener to completion rate of 26% and a cost of $42.99 per survey. For the second campaign, we dropped Facebook and focused solely on Twitter, offering $10 compensation. We received 50,475 impressions that yielded 55 completed surveys (screener to completion rate = 71%) costing $4.78 each. The final campaign tested simpler messaging on Twitter with $10 compensation, and received 8,897 impressions, 38 survey completions (screener to completion rate = 88%), and cost $1.19 per survey. Conclusions: While Facebook is widely used among Americans, our findings may suggest that Twitter is more engaging and cost-effective. Recent Facebook policy changes may explain the differences seen in cost and survey completion. Understanding the reach and effectiveness of the different platforms will help ensure the success of an intervention using social media.

### Reducing Cancer Health Disparities by Engaging Underrepresented Researchers (UR) in Cancer Research: Strategies Utilized for Recruitment and Retention in the Geographic Management of Cancer Health Disparities Program (GMaP) Region 4

Fleisher L and Norbeck C
Presenter: **Linda Fleisher, PhD, MPH,** Fox Chase Cancer Center

Purpose: The Geographic Management of Cancer Health Disparities Program (GMaP), initiated 2009, is a national program funded by the National Cancer Institute's Center to Reduce Cancer Health Disparities (CRCHD). GMaP Region 4 is a thirteen state region utilizing a multipronged engagement approach to increase recruitment and retention of diverse investigators, and to strengthen professional development of a diverse cancer workforce. Methods: Data was collected via two surveys addressing the effectiveness of this network approach. A survey to diversity training awardees on barriers to application and strategies for support yielded 42 responses. A survey to travel awardees yielded 22 out of 37 responses, a 59% response rate, to gain understanding of how GMaP can support early stage investigators (ESI) in their cancer research development, with a focus on how support for travel to national meetings connects to research success. Summary of Results: Travel scholars ranked via Likert scale the following services as Most Beneficial. "Travel Scholarships " (21, 95.5%); Pilot Funds (for feasibility data collection to support ongoing research)" (17, 77.3%); E-blast with job/funding/training resources " (12, 54.5%); Grant Review - (11, 50.0%); and Introductions to CRCHD Program Officers in Training Navigation - (10, 47.6%). Since their award, the following grant applications have been submitted: K01 - (1, 6.7%), R03 (3, 20.0%), R34 (1, 6.7%), F31 (4, 26.7%), R21 (5, 33.3%), R01 (1, 6.7%), other award: (8, 53.3%). Respondents gave open-ended responses on barriers to applying for diversity awards (28 responses) including Identification of appropriate mentors, Low awareness at their home institution, and Culture of Institution - lack of support persons of diverse backgrounds. These data further inform and enhance specific GMaP Region 4 offerings. Recommendations: Strategies utilized by GMaP Region 4 have resulted in over 800+ cancer focused students and researchers. A combined approach of career development support via Expert Grant Review, Pilot Funding, Travel Scholarships, mentor and networking opportunities, and tailored communications has been key in the development of this network, and helped more than 100 potential diverse trainees move toward grant application.

Session 3: Methodologic Innovation in Cancer Research
Tuesday, March 12, 1:15-2:45 p.m. (Cont.)

## Clinical Documentation of Tobacco Use in Pediatric Practice: Challenges and Opportunities

LeLaurin JH, Theis RP, Tan ASL, Young-Wolff KC, Carter-Harris L, Thompson LA, Salloum RG
Presenter: **Jennifer LeLaurin, MPH,** University of Florida

Purpose: To describe tobacco use and tobacco smoke exposure (TSE) documentation practices in pediatric clinics. Methods: Using a convergent mixed-methods study design, we conducted an electronic health record (EHR) review of 508 well-child visits among adolescents (aged 11-17) and in-depth qualitative interviews with a subset of 16 adolescents at four pediatric primary care clinics from July 2016 to November 2017. Records were assessed for documentation of tobacco use, TSE, and provision of tobacco-related counseling for adolescents and parents. Interviews collected adolescents' perspectives on and history of tobacco use, and tested usability of an electronic clinical support tool emphasizing screening for use of specific cigarette and non-cigarette tobacco products. Record review data and interview transcripts were analyzed and interpreted concurrently using iterations of deductive and inductive coding, following a team-based coding approach to ensure high inter-rater reliability. Results: Cigarette use screening was documented in 92.3% of visits and smokeless tobacco use screening in 51.4% of visits. Lower rates of assessment for parental tobacco use (23.2%), home TSE (33.1%), and vehicle TSE (22.4%) were found. Providers documented advising against tobacco use in 6.5% of visits. Multiple tobacco-related prompts were identified. Smoking status response options were not mutually exclusive and did not include non-cigarette tobacco/nicotine products or TSE. No records documented assessment of e-cigarette or hookah use, despite nearly half of adolescent interview respondents citing these as the products most commonly used by teens. In interviews, adolescents discussed their experiences with alternative tobacco/nicotine products more than cigarettes. Conclusions: Tobacco use status prompts should be revised for clarity and include non-cigarette tobacco products and TSE. Provider education on the importance of e-cigarette, hookah, and TSE assessment in adolescents is needed. Improvements in EHR systems, resources, and tools can lead to better tobacco screening, prevention, and treatment practices among primary care providers.

## Machine Learning to Predict Follow-up for Abnormal Cervical Cancer Screening using Electronic Health Record Data: Model Development and Validation

Pruitt SL, Lu R, Tiro JA, Hughes AE, Xie Y, Xiao G, Ahn C, Borton E, Sanders J, Sugg Skinner C
Presenter: **Sandi Pruitt, PhD,** University of Texas Southwestern Medical Center

Purpose We developed and tested the accuracy of a machine learning algorithm to predict whether women with abnormal Pap smears complete follow-up colposcopy within 6 months (yes/no). Methods Using electronic health records (EHR) data from an urban, integrated safety-net healthcare system in Texas, we identified women with abnormal Pap smear results requiring colposcopy between 2010 and 2015. Women were included if they were ages 18-64, not pregnant, did not receive colposcopy on day of Pap smear, and had 1 visit prior to their Pap smear. We extracted 76 sociodemographic, clinical, healthcare utilization, residential address, and residential mobility (changes to residential address over time) variables from the EHR. We split the sample of women into training (2/3, n=3,529) and validation (1/3, n=1,764) datasets. We used recursive feature elimination with 5 repeated 10-fold cross-validation and random forest base for feature selection in the training set, then applied the best-fitting model using elastic net regression to the validation set. We measured variable importance using the normalized absolute value of coefficients. All analysis was performed in R. Results Of 5,293 women, 69% completed colposcopy within 6 months. Based on the training set, 73 variables were selected. Area under the curve for this model was 0.97 in the training set and 0.79 in the validation set. The most influential variables represented frequency of prior healthcare utilization, clinic and provider type at time of abnormal Pap, HIV status, and patient residential mobility. Additional post hoc analyses will determine circumstances under which our prediction model works best and will explore how influential variables relate to timely colposcopy. Discussion Cervical cancer screening can save lives, but only if positive results are followed by timely diagnostic colposcopy. Application of machine learning to EHR data accurately predicted colposcopy uptake. If implemented directly into EHR systems, healthcare systems using our approach could predict "at the time of an abnormal Pap result" who is less likely to follow up. Targeted interventions, such as patient navigation, could then be deployed for patients who need it most.

## Session 4: Cancer Survivorship and Caregiver Health
Tuesday, March 12, 1:15-2:45 p.m.

### Results of A Randomized Pilot Trial of SHARE: A Self-Management Intervention for Head and Neck Cancer Patients Undergoing Radiotherapy and their Spousal Caregivers

Badr H, Chhabria K, Sandulache VC, Chiao E, Wagner T
Presenter: **Hoda Badr, PhD,** Baylor College of Medicine

BACKGROUND: Head and neck cancer (HNC) patients experience significant physical and psychological morbidity during radiotherapy (XRT) which contributes to treatment interruptions and poor quality of life. Although spouses/partners can help by encouraging patient self-management (e.g., self-care) during XRT, they often experience high psychological distress rates, lack basic healthcare knowledge/skills, and report increased marital conflict regarding patient self-management. This pilot study examined the feasibility and acceptability of a six- session telephone-based intervention called SHARE (Spouses coping with the Head And neck Radiation Experience), which teaches self-management, communication, and coping skills to HNC patients and their spouses. Treatment effects of SHARE relative to usual medical care (UMC) in controlling patient physical symptoms and improving patient/spouse psychological and marital functioning were also examined. METHODS: Thirty patients initiating XRT and their spouses (N=60 participants; 40% racial/ethnic minorities) were randomized to SHARE or UMC, and pre- and post-intervention assessments were completed. RESULTS: Solid recruitment (70%) and low attrition rates (7%) demonstrated feasibility. Strong program evaluations and homework completion rates (72%) supported acceptability. Significant treatment effects (medium in magnitude) were observed for SHARE relative to UMC with regard to HNC-specific physical symptom burden (Cohen's d=-.89) and symptom interference (d= -.86). Medium-to-large effects favoring SHARE were also found for patient and spouse depressive symptoms (d=-.84) and cancer-specific distress (d=-1.05). CONCLUSION: Findings support the feasibility, acceptability, and preliminary efficacy of SHARE. They also suggest that programs that empower HNC couples with the necessary skills to coordinate care and manage the challenges of XRT together hold great promise for controlling patient physical symptoms and improving both partners' psychological functioning.

### A Hope-based Intervention to Address Disrupted Goal Pursuits and Quality of Life in Young Adult Cancer Survivors

Berg CJ, Vanderpool RC, Getachew B, Johnson MF, Payne JB, Sandridge Y, Bierhoff J, Kelly J, Effinger KE, Demark-Wahnefried W, Duffy S, Mertens A
Presenter: **Betelihem Getachew, MPH,** Emory University

Purpose of the study: In this pilot study, we assessed feasibility and acceptability, and obtained efficacy parameters of an app based 8-week program focusing on a hope- based intervention to address the disruption of goal pursuits among young adult cancer survivors in order to ultimately increase quality of life. Methods: This 8-week app-based intervention program, known as AWAKE (Achieving Wellness After Kancer in Early Life), consists of educational videos, mood/activity tracking, and telephone-based coaching to promote goal-oriented thinking and quality of life (QOL) in young adult cancer survivors (YACSs). Fifty-seven YACSs (18-40 years old), two years post treatment were recruited from two NCI-designated cancer centers and randomly assigned to AWAKE (n=38) or an attention control (n=19). Both AWAKE and attention control group received weekly coaching calls. The app content for the AWAKE intervention group included 8 weekly modules specifically targeting the needs of young adult cancer survivors; the content delivered via text for those in attention control focused on personal finances. At weeks 0, 8, and 24, we assessed hope (via the Trait Hope Scale) and QOL (via the 36-Item Short Form Health Survey and Functional Assessment of Cancer Therapy-General). Results: The mean age was 32.2 years old, and 75.0% were female, 77.6% non- Hispanic White, 61.2% employed, and 67.3% married/stable union. Diagnoses included breast cancer (28.6%), hematologic malignancies (12.2%), and melanoma (12.2%). Weekly adherence to AWAKE averaged 86.1% (range: 100.0% at week 1 to 75.7% at week 8). Retention at end-of-treatment was 90.7%. Among AWAKE participants, 90.9% were satisfied with AWAKE and would recommend AWAKE to friends with cancer; >84.8% reported that AWAKE components were helpful. Despite being underpowered to detect efficacy, changes in hope and QOL outcomes trended in the hypothesized directions. Conclusion: AWAKE was a feasible and acceptable approach; changes in hope and some measures of QOL trended in the hypothesized direction. AWAKE has the potential to address disrupted goal pursuits and enhance QOL among YACSs. Future research is needed to examine AWAKE's efficacy in a larger RCT. Future research is needed to examine AWAKE's efficacy in a larger RCT.

## Caregiver intention to restart vaccinations after childhood cancer treatment

Warner EL, Mann K, Kaddas HK, Martel L, Pannier S, Knackstedt B, Fair D, Fluchel M, Kepka D, Kirchhoff AC
Presenter: **Anne Kirchhoff, PhD, MPH,** University of Utah

Background: Timely vaccination after childhood cancer treatment is vital for protecting against vaccine-preventable diseases during survivorship. However, caregiver intention for restarting vaccinations, such as getting catch-up or booster vaccines, after cancer treatment is unknown. Methods: We surveyed primary caregivers ages 18 or older with a child who had completed cancer treatment in the prior 3-24 months (N=129; participation rate=60.3%). Participants were asked about demographics, their child's vaccination status, and healthcare factors (e.g., provider recommendations, barriers). We examined the influence of whether the oncology care team recommended catch-up or booster vaccines on caregiver intention to restart vaccines using multivariable generalized linear models. Vaccine barriers were examined by intention in chi- square tests. Results: Caregivers were primarily aged 30-49 years (82.0%), mothers (81.2%), college graduates (44.8%), married (89.1%), and Non-Hispanic (90.3%). In total, 67% of caregivers intended to restart vaccines for their child and 49.6% reported that they had a discussion with the cancer care team about catch-up or booster vaccines. Caregivers who discussed vaccines with their child's cancer care team were much more likely to report intention to restart vaccination (Relative Risk (RR)=1.82, 95% CI 1.37-2.45). The most common barrier to restarting vaccines after cancer was not knowing which vaccines to get, which was common across both groups (intend to restart=31% vs. did not intend=40.5%, p=0.29). Of caregivers, 93.1% who intended to restart vaccines felt vaccines were safe compared to 79.5% of those who did not (p=0.02). Conclusions: Caregivers of childhood cancer survivors need guidance for restarting vaccinations after cancer treatment, including information on safety and which vaccines their child needs. Provider recommendations positively influence caregiver's intention to restart vaccines. Clinical guidelines are needed to support providers in making tailored vaccination recommendations after cancer treatment.

## Longitudinal dyadic associations between perceived social support and cancer patient and caregiver health: An Actor-Partner Interdependence modeling approach

Kelley DE, Kent EE, Litzelman K, Mollica MA, Rowland JH
Presenter: **Dannielle Kelley, PhD, MPH,** National Cancer Institute

Purpose: Social support may have a positive impact on health outcomes for patients and caregivers, but the extent to which social support and health outcomes are interrelated for both groups is unknown. This analysis examines the dyadic interrelationships between social support and health among cancer patients and their caregivers. Methods: Data from lung and colorectal cancer (CRC) patient and caregiver dyads were obtained from the Cancer Care Outcomes Research and Surveillance (CanCORS) Consortium. Patients and caregivers self- reported sociodemographic, social support, and caregiving characteristics at 5-months post-diagnosis (n=218 lung dyads; n=222 CRC dyads) or 12-months post-diagnosis (n=198 lung dyads; n=290 CRC dyads). Structural equation modeling was used to examine actor-partner interdependence models of lung and CRC dyads at 5- and 12-months post-diagnosis. Results: The API models suggest that social support is positively related to patient and caregiver self-reported health across the cancer trajectory, yet in different ways. At 5-months post-diagnosis, no interdependence between patient and caregiver social support was detected for either CRC or lung dyads (all p>0.05). At 12- months post-diagnosis, no interdependence was detected for CRC dyads (all p>0.70); however, lung dyads showed complete interdependence, indicating patient social support is associated with better caregiver self- reported health ($\beta^2$=0.15, p<0.001), and caregiver social support is associated with better patient self-reported health ($\beta^2$=0.18, p<0.001). Conclusions: Social support has a positive impact on patient and caregiver perceived health across the cancer trajectory, and these effects may differ by cancer site and time. Future research and translational efforts are needed to identify effective ways to bolster both patient and caregiver social support, as well as determining critical moments for intervention across cancer sites.

Session 4: Cancer Survivorship and Caregiver Health
Tuesday, March 12, 1:15-2:45 p.m. (Cont.)

## Ethnicity as a Moderator of the Effects of Aerobic and Resistance Exercise on Inflammatory Biomarkers in Breast Cancer Survivors

Dieli-Conwright CM, Sweeney FC, Tripathy D, Courneya KS, Sami N, Lee K, Buchanan TA, Spicer D, Bernstein L, Mortimer JE, Demark-Wahnefried W
Presenter: Christina Dieli-Conwright, PhD, MPH, University of Southern California

Purpose Chronic inflammation is associated with recurrence, and increased risk of cardiovascular disease and type 2 diabetes in breast cancer survivors (BCS), the latter two of which are particularly elevated among Hispanic versus non-Hispanic women. Chronic inflammation is likely higher among Hispanic women who are heavier and less physically active than non-Hispanic counterparts. Exercise mitigates inflammation in BCS; however, few studies have focused on minorities. The purpose of this secondary analysis was to examine ethnicity as a moderator of the effects of a 16-week aerobic and resistance clinical exercise intervention on inflammatory biomarkers among BCS. Methods Sedentary, overweight or obese (BMI 25.0 kg/m2) BCS (Stage I-III) were randomized to exercise (n=50) or usual care (n=50). The thrice weekly 16-week intervention included supervised, progressive moderate-vigorous aerobic (65-85% maximum heart rate) and resistance (65-85% 1-repetition maximum) exercise. Inflammatory biomarkers (CRP, IL-6, IL-8, TNF-) were measured at baseline and post-intervention. Differences in mean changes for outcomes by ethnicity were evaluated using linear mixed-models. Results 57 Hispanic and 43 non-Hispanic BCS aged 53.5±10.4 years and BMI of 33.5±5.5 kg/m2 participated Hispanic BCS were younger, of greater adiposity, had higher stage cancers, and had worse inflammatory profiles at baseline compared to non-Hispanic BCS (p<0.001). Exercise significantly reduced all inflammatory biomarkers among Hispanic and non-Hispanic BCS when compared to the usual care group (p<0.001). Ethnicity moderated the effects of exercise training on CRP (mean difference, -3.3; 95% confidence interval (95% CI), -7.3 to -0.9; p=0.04), IL-6 (p=0.03), IL-8 (p=0.04), TNF-p=0.03) with Hispanic BCS exhibiting larger improvements than non- Hispanic BCS. Conclusions Hispanic, as compared to non-Hispanic BCS, have poorer inflammatory profiles, but may achieve better outcomes from exercise. To our knowledge, this is the first study to explore racial/ethnic disparities in inflammatory biomarkers between Hispanic and non-Hispanic BCS and document differential response to exercise. Clinical exercise interventions may attenuate ethnic health disparities in BCS.

## "It's a prescription, not an addiction": Exploring health care provider and advocate perceptions of opioid use among cancer survivors

Lake PW, Chavez, M, Diaz E, Gutierrez A, Rigg K, Martinez-Tyson, D
Presenter: Paige Lake, MPH, University of South Florida

Purpose. Opioids can be of great benefit for cancer survivors who suffer from cancer-related pain. However, the risk of opioid misuse is a growing concern for this population. We aimed to understand health care providers and cancer survivor advocates perceptions of and experiences with opioid use among cancer patients. Methods. Providers (n=30) who work with cancer survivors and survivor advocates (n=10) completed an interview via telephone or in-person where they were asked questions focused on: perceptions of physician prescribing practices, perceptions of opioid use among cancer patients, alternative methods recommended for pain management, and barriers to pain management. Inductive applied thematic analysis was employed in order to identify common themes. Results. Providers/advocates felt that cancer survivors are prescribed opioids more liberally because of their status as a cancer patient and many believe patients may not view opioids as addicting, because they are prescribed by a physician. However, some expressed concern that survivors may be vulnerable to addiction, as very little information/education about the medication is given to patients (i.e., side effects, how to take). Prescription of opioids was informed by the patient's cancer type/stage, treatment, and surgery. Participants expressed lack of: education, patient-provider relationship, and cost of non-opioid medications/alternatives as barriers to pain management. They also indicated that patient emotional state (i.e., high anxiety) can often influence their desire to take opioids. In contrast, some participants felt that patient's fear of becoming addicted influences their use/non-use of opioids for managing cancer related pain. Conclusions. Providers may have limited training on opioid prescription and counseling/education and may not view addiction as a potential problem. Results can inform future provider-focused interventions and could emphasize components such as alternative pain management methods, assessing risks of developing opioid use disorders through validated screening tools, and techniques for improving communication/engagement with patients on topics such as opioid use, pain management, and coping methods to deal with cancer-related pain during and after cancer treatment.

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- T *Denotes Trainee*

## 1-T

### Negative Affect and Utilization of Evidence-Based Tobacco Treatment among Adults with Cancer

Lee J, Cheong J, Salloum RG

Continuing cigarette smoking increases health risks among cancer survivors, including secondary cancers and mortality, and decreases the effectiveness of cancer treatments. In the current study, we use nationally- representative data from the Population Assessment of Tobacco and Health (PATH) Study to examine the patterns of evidence-based tobacco treatment utilization among adults with cancer compared with non-cancer respondents. We also examine whether individual-level psychosocial factors influence attempts to quit tobacco use and the likelihood for tobacco treatment utilization. Our analytic sample included current smokers and those who made a recent quit attempt (within 12 months). We conducted logistic regression models with cancer history as the main predictor for the following outcomes: 1) made a recent quit attempt and 2) utilization of tobacco treatments. The tobacco treatments included pharmacological (e.g., nicotine replacement therapy and prescribed medication) and behavioral treatments (e.g., counseling and social support). We conducted path analysis with negative affect (e.g., depressive affect, anxiety, and distress) as a mediator for utilization of tobacco treatments. Among our analytic sample (n=12,487), adults with cancer were 1.34 times more likely to have made a recent quit attempt, compared with adults without cancer (p=.012), after controlling for demographic factors. However, among those who made a recent quit attempt (n=6,657), there was no association between cancer history and use of any tobacco treatments (p=.073). Further, adults with cancer who were more likely to have experienced negative affect (e.g., depressive affect, anxiety and distress) (B=.198, SE=.069, p=.004), in turn, were more likely to have used tobacco treatments (B=.147, SE=.026, p<.001). Among negative affect measures, only anxiety was associated with quit attempts (B=.107, SE=.046, p=.020), indicating that adults with cancer who were more likely to have experienced anxiety, in turn, were more likely to make a quit attempt. These results underscore the need for tobacco treatment strategies tailored to cancer care settings and to health communication strategies that consider emotional management.

## 2

### Efficacy of an HPV Vaccine App for Hesitant Parents: A Test of Self-Persuasion

Tiro JA, Zhu H, Fullington H, Xu X, Marks EG, Rodriguez S, Baldwin AS

Background/Purpose: Many parents are hesitant about the HPV vaccine. Self-persuasion process of generating one's own arguments for changing behavior could be effective at addressing parental hesitancy. To meet the needs of low-literacy parents and busy clinics, we developed and tested a mHealth app with voiceover narration (in English and Spanish) to elicit parental self-persuasion for adolescent HPV vaccination. Methods: Using a 2x2 factorial randomized trial design, we tested 4 self-persuasion app versions, that varied by cognitive engagement (deep processing/verbalized reasons vs. shallow processing/listened to reasons) and argument topic choice (yes vs. no). Hypotheses were that intentions score and proportion deciding to get the vaccine would be highest in the verbalize, choice condition and lowest in the listen, no choice condition. Undecided parents (N=161) of unvaccinated adolescents aged 11-18 years attending 6 safety-net clinics viewed a 4-minute educational video, and then were randomized to 1 of 4 app versions. Pre/post surveys measured intentions and decision stage. Multivariate linear/logistic regressions estimated impact of app versions on intentions/ decision stage controlling for baseline score, parent language, child sex and age, clinic, and trial enrollment month. Results: Most parents were Hispanic (68%) and used the app in Spanish (56%). Multivariate intent-to-treat analyses found intentions to vaccinate their child was highest in the verbalize, choice condition compared to listen, no choice condition (p=.003). 52 parents decided to get the HPV vaccine after seeing the educational video. Among the remaining 108 parents, those exposed to the verbalization versions were more likely to decide to get the vaccine compared to those in the listen, no choice version (adjusted odds ratio=4.06, 95% CI: 1.06, 15,56). Conclusions: The self-persuasion app significantly changed parents intentions and decision stage. The optimal app version requires parents to verbalize their reasons for getting the HPV vaccine. This suggests that the app can effectively engage undecided parents in deep, reflective cognitive processing of information and shift them out of echo chambers that reinforce vaccine hesitancy.

*- T Denotes Trainee*

## 3

### Investigating disparities between HPV and other adolescent vaccines: Preliminary findings from provider surveys in selected rural counties in a rural Midwestern state

Askelson N, Ryan G, **Seegmiller L**, Pieper F, Allred T, Adam E

Purpose: The purpose of this study was to determine provider perceptions of the HPV vaccine and recommendation behaviors in rural counties with lower than state average HPV vaccination coverage. Methods: Using immunization registry data, we identified seven rural counties with Tdap and meningitis vaccination rates at the state average and lower than state average HPV vaccination rates. We mailed 125 primary care providers practicing in those counties a survey with a $20 incentive. The survey collected demographics, recommendation behavior, perceived importance of the vaccine, knowledge and attitudes, and efforts to increase vaccine coverage. Results: We received surveys from 84 (67.7%) providers. Respondent credentials were split between MD (21.4%), DO (20.2%), PA (22.6%), and ARNP (29.8%). Less than half (44.0%) have no order preference when recommending adolescent vaccines. Of the 46.4% who did have a preference, 25.0% recommend Tdap first and 39.3% recommend HPV last. Compared with other adolescent vaccines, 77.4% reported that HPV is equally important and 14.3% view it as slightly less important. The majority of providers advise their patients that the HPV vaccine is very (45.2%) or extremely important (23.8%). When discussing the vaccine with patients, the majority of providers focus on its ability to prevent cervical cancer (95.2%) and fewer mention the prevention of genital warts (71.4%) and other cancers (67.9%). While 67.9% of providers recommend the HPV vaccine at patients' current visit, 21.4% offer a choice about when to get it. Providers believe that more effort (69.0%) should focus on increasing HPV vaccination rates in their county. However, they reported low personal effort to do so both with their colleagues (26.2%) and in their communities (3.6%). Conclusions: The majority of providers tell their patients the HPV vaccine is important and recommend they get it at their current visit. While the majority of providers believed more effort was needed to increase HPV vaccination in their counties, few reported activities during the previous month. These results highlight the need to help providers improve HPV vaccine recommendations and encourage engagement of colleagues and community members to increase HPV vaccination rates.

## 4-T

### Receipt of Health Information among Cancer Survivors

Sommariva S

Purpose of the study. The purpose of the study was to examine factors associated with receiving instructions from health care providers among cancer survivors in the United States. Methods: The 2016 Behavioral Risk Factors Surveillance System included a module for adult cancer survivors (n=7,627). Two outcomes for receipt of health information were assessed general instructions and written/printed instructions. A survey-weighted logistic regression model assessed factors associated with receipt of instructions in SAS 9.4. Results: Among cancer survivors, 69% reported receiving instructions on treatment from a healthcare provider. Among those, 76% received instructions in written or printed form. Older adults were less likely to receive instructions(aPR=0.64,95% CI:0.49-0.80). Lower educational attainment was also associated with lower likelihood of receiving any instructions (aPR=0.88,95% CI:0.77-0.97). Respondents with income levels <$25,000 were less likely to receive any instructions compared to persons earning >=$50,000 (aPR=0.90,95% CI:0.83-0.98). Age of diagnosis was also significant, with younger patients being less likely to receive instructions (aPR=0.87,95% CI:0.77-0.97). Skin cancer survivors were also less likely to receive instructions compared to colon cancer survivors (aPR=0.86,95% CI:0.72-0.98). Conclusions. This study highlights demographic and health- related disparities depending on patient's age, educational attainment, income, age of diagnosis, and cancer type. These factors may be more influential than race and ethnicity in understanding disparities in access to health information. Considering them in health education efforts is an important step towards achieving health equity among cancer survivors.

*- T  Denotes Trainee*

| 5-T | 6-T |
|---|---|

## Fear of Addiction Among Cancer Survivors: The Perceptions of Pain Medication Management

**Chavez M**, Lake P, Gutierrez A, Dias E, Lubrano B, Rajasekhara S, Sherry P, Tyson Martinez D

Purpose of the study: The purpose of this study was to explore the perceptions of opioid use and misuse among cancer survivors who experience cancer-related pain as a side effect from their treatment. Methods: Cancer survivors (n=26) who were less than five years' post-treatment and had been prescribed an opioid medication at some point during their cancer treatment or after treatment completed a semi-structured telephone or in-person interview. Open-ended questions concerning their cancer diagnosis, pain experience, treatment and their perceptions of pain medication management and opioid use and misuse were included. Interviews were audio-recorded, transcribed, coded and analyzed using applied thematic analysis techniques. Results (adequate to support conclusion): Participants were aware of the need for pain medication to help with pain management. However, the majority expressed concerns about the negative rhetoric surrounding medications such as opioids. Many participants voiced the fear that the use of opioid analgesics contributes to the development of tolerance and addiction. Participants who were on long-term opioid use and on high doses, shared they often face stigma and are perceived as being an addict from their health care provider as well as family and friends. These beliefs and perceptions are often shaped by the media, family, and friends who may ultimately affect their quality of life. Conclusions: Fear of addiction related to opioids may lead cancer survivors to reject pain medications and act as a barrier to effective pain management. Improvements in provider, patient, and family education can help ensure cancer survivors make a well-informed decision regarding their pain management plan and enhance their quality of life.

## Breast Cancer Risk Notification in the Mammography Screening Population: A Pilot Study

**Conley CC**, Augusto B, Garcia J, Taylor S, McIntyre M, Roetzheim R, Funaro K, Gerke T, Kim J, Niell B, Vadaparampil ST

Purpose of the Study: To explore the impact of breast cancer (BC) risk notification on usage of risk appropriate BC management strategies among women at ≥20% lifetime risk. Methods: Women presenting for screening mammography underwent BC risk stratification as part of routine clinical care. Estimated lifetime risk was computed using the modified Gail, Tyrer-Cuzick (TC7), and BRCAPRO models. Numerical risk information was sent to referring providers via the electronic medical record. Women at high (≥20%) risk based on any stratification model (N=298) received a mailed letter with categorical risk information and American Cancer Society recommendations for supplemental screening MRI. A subset of high risk women consented to a follow-up study (n=71). Follow-up is ongoing; 34 women have completed the 6 month follow-up assessment. Outcomes of interest included (a) patient recall of risk and (b) receipt of screening breast MRI. Results: Participants were 52 (±8) years of age, 74% were non-Hispanic White, 79% had ≥college education, and 77% had private health insurance. Six months after their screening mammogram, 23 women (68%) recalled receiving a letter with risk stratification information and 12 (35%) correctly recalled their risk level. Since the time of screening mammography, 6 women (18%) reported receiving a physician recommendation for breast MRI and 3 (9%) received a breast MRI. Of those women who received a breast MRI, 2 (67%) reported that their breast MRI was recommended by the provider who had referred them for their screening mammogram. Conclusions: This pilot study demonstrates that conducting risk stratification at the time of screening mammography is feasible. However, the majority of patients did not correctly recall the risk information provided. In addition, few high risk women reported physician recommendation for or receipt of risk-concordant management strategies (i.e., supplemental screening MRI). This may be due to the follow-up time point selected; extended follow-up is necessary to understand usage of risk-management strategies. In addition, future research should improve risk communication, with the ultimate goal of increasing risk appropriate BC management.

## 7

### The NCI Cancer Center Cessation Initiative: Increasing the Reach of Tobacco Treatment Programs at NCI-Designated Cancer Centers

D'Angelo H, Adsit R, Morgan G, Rolland B, Rosenblum M, Pauk D, Fiore MC

Purpose: Quitting smoking leads to better outcomes for cancer patients, yet few receive smoking cessation services during oncology healthcare visits. The National Cancer Institute (NCI) has dedicated Cancer Moonshot funding to expand tobacco treatment programs (TTPs) at NCI-Designated Cancer Centers for patients who smoke. This study examines changes in the TTPs before and after funding was awarded through the Cancer Center Cessation Initiative (C3I). Methods: The 22 NCI Cancer Centers funded were surveyed twice in 2018 using online questionnaires for the 6 months before funding (pre-funding) and 6 months during the first year of funding. Types of TTPs offered and referral methods to TTPs (e.g. via electronic health records (EHR)) were measured. TTP reach (the percentage of smokers who engaged in any type of TTP) was calculated overall and by demographics for Centers providing aggregate data (n=13). Results: Between the pre-funding and first funding period, the number of C3I Centers offering in-person cessation counseling increased from 10 to 15 (45.5% to 68.2%). Four Centers (18.2%) offered text and web based cessation programs in the first funding year compared with only 1 Center (4.5%) in the pre-funding period. EHR referrals to TTPs increased from 31.8% to 68.2% of Centers. During the funding period, TTP reach was 20.2%, but ranged from 0.5% to 86.5%. Reach varied by race/ethnicity, with 16.4% of Black, 15.8% of White, 11.8% of Hispanic, 10.6% of Asian, and 6.2% of American Indian/Alaska Native smokers receiving smoking cessation services. About 13% of smokers aged 18-24 received services, compared with those aged 25-44 (17.7%), 45-64 (22.9%) and 65+ (18.7%). Conclusion: After receiving funding, C3I Cancer Centers implemented in-person and text/web smoking cessation programs, and also shifted towards EHR based referrals. However, on average, only 20% of smokers were reached by a TTP during the first funding period. Reach also varied by race, ethnicity, and age. C3I Centers will continue to expand services and report on reach over the next year, with the goal of improving reach over time. The C3I supports this goal by providing financial and technical support for Centers to build and implement comprehensive evidence-based smoking cessation programs.

## 8

### HPV Vaccine Decision-Making in the Transition between Adolescence and Adulthood

Glenn BA, Nonzee NJ, Pedone B, Cowgill BO, Tieu L, Liang J, Bastani R

Purpose: Young adulthood is characterized by changes in health care decision-making, insurance coverage, and sexual risk. Although the human papillomavirus (HPV) vaccine is now approved for adults up to age 45, and catch up vaccination is currently recommended for women up to age 26 and men up to 21, vaccination rates remain low in young adults. This study explored perspectives on HPV vaccination among young adults receiving care at the student health center of a large public university. Methods: We conducted semi-structured interviews (n=27) and 4 focus groups (n=18) with undergraduate and graduate students and semi-structured interviews with health care providers (n=6). Interviews and focus groups explored perceived risk of HPV infection, benefits of the HPV vaccine, and motivations for and barriers to HPV vaccination. Results: Many young adults cited their parents as influential on their decision-making process. Some were hesitant to pursue the vaccine if they felt their parents did not approve. Others were unsure if they had already received the vaccine. Sexual history also affected vaccine motivation with abstinent respondents expressing lower motivation for vaccination, despite the fact that the vaccine is recommended for delivery before the sexual debut. Some participants were unsure of the value of the vaccine for men and at older ages. Barriers to vaccination included uncertainty over insurance coverage for the vaccine, concerns about balancing the vaccine schedule with school obligations, and potential side effects. Provider recommendation appeared influential on vaccine motivation. Women's health providers expressed a strong motivation to vaccinate their patients. Primary care providers endorsed the vaccine's importance, but perceived more challenges to vaccinating this age group. Strategies suggested by providers to increase vaccination included emphasizing its role in cancer prevention and offering the vaccine at every clinic visit. Conclusions: Although college may be an opportune time to reach young adults for HPV vaccination, obstacles including lack of awareness of vaccination status, concerns about losing insurance coverage before series completion, and discomfort with independent decision-making may impede vaccination during this time.

# Poster Session Abstracts

## 9

### Variations in reason for intentions not to vaccinate across time and by race/ethnicity, NIS-Teen (2008-2016)

Hirth JM, Fuchs EL, Chang M, Fernandez ME, Berenson AB

Purpose: Human papillomavirus (HPV) vaccination in adolescence prevents cervical cancer later in life. However, the vaccine is often declined by parents. Reasons for declining the vaccine may vary. The purpose of this study is to examine how parents' reasons for not vaccinating their children with the HPV vaccine have changed over time, and how these reasons vary by race/ethnicity. Methods: We used a nationally representative repeated cross-sectional survey (National Immunization Survey- Teen (NIS-Teen)) to examine variations in reason for declining the HPV vaccine among parents of 13-17 year olds. Data were collected annually 2008- 2016. Frequently cited reasons were graphed according to year of survey, and trends were examined using joinpoint analysis. All reasons for declining were examined by race/ ethnicity and multivariable logistic regression were conducted to examine variation in reasons for refusal. Results: Significant increases across time in refusing HPV vaccination due to safety concerns and lack of school requirement were observed. Refusing vaccination due to lack of knowledge, child not sexually active, and inappropriate age decreased across time. Significant increase in frequency of refusing due to lack of provider recommendation was observed 2008 to 2012, with a decrease occurring after 2012. Several reasons for not intending to vaccinate their children varied according to race/ ethnicity. Conclusions: Frequency for some reasons related to HPV vaccine refusal changed over time, and reflected efforts of education programs implemented in the US. Racial/ethnic differences in reasons for HPV vaccine refusal need to be better understood to improve vaccination programs.

## 10-T

### How Do Transdisciplinary Research Approaches Support Cancer and Chronic Disease Prevention? Investigator Perspectives across two Transdisciplinary Research Initiatives

Hohl SD, Neuhouser ML, Beresford SAA, Thompson B

The Transdisciplinary Research on Energetics and Cancer II (TREC) and Centers for Population Health and Health Disparities II (CPHHD) were two NIH-funded transdisciplinary initiatives that aimed to address energy balance and health disparities and their relationship to cancer and chronic disease. In this study, we gathered perspectives from TREC and CPHHD investigators to determine if and how their transdisciplinary collaborations resulted in novel products to address cancer and chronic disease prevention, management, and recurrence. Methods: In this multiple case study, we conducted semi-structured interviews with CPHHD II (n=25) and TREC II (n=41) investigators in 2015. We transcribed data and conducted a directed content analysis, in which we aimed to 1) characterize and compare outcomes of transdisciplinary collaboration that addressed disease prevention, management, and recurrence and 2) assess the contexts and processes that facilitated or hindered achievement of such outcomes across the two TD initiatives. Results: Both TREC and CPHHD aimed to integrate disciplinary perspectives to address energy balance and health disparities respectively but CPHHD II projects largely focused on a variety of policy issues and TREC II Centers commonly focused on the basic science of energetics. Investigators described similar outcomes of transdisciplinary collaborations, such as new methods, new multi-level intervention models to promote disease prevention and management, and translation of research findings into guidelines and public policy. Means to achieving those outcomes differed by research center and initiative. For example, some centers utilized a shared leadership model while others were led by a single director. A funded Coordination Center facilitated collaboration across TREC whereas an individual contractor supported CPHHD cross-center administration.Conclusions: Developing solutions to the multifaceted challenge of preventing cancer and chronic disease may be enhanced through collaborations that span academic disciplines and community sectors. However, effective collaborations depend on effective team processes and composition, infrastructure support, and team leadership.

## 11

### Oral Health Students' Willingness to Train and Administer the HPV Vaccine in Dental Practices

**Kepka DL**, Rutkoski H, Pappas L, Tay DL, Winkler JR, Dixon B, Velazquez A, Pinzon LM

Purpose of the study: HPV oropharyngeal cancers have now surpassed cervical cancer rates in the United States. Dental providers' engagement in HPV education and vaccination efforts may help reduce the burden of HPV oropharyngeal cancers. We examined factors associated with oral health students' willingness to train and administer the human papillomavirus (HPV) vaccine in dental settings. Methods: United states dental and dental hygienist students in 15 oral health programs participated in an online survey in 2015. Data from a total of N=306 students were analyzed to examine sociodemographic, educational, practice, and attitudinal factors associated with willingness to train and administer the HPV vaccine. Unadjusted and multivariable logistic regression were conducted and odds ratios (OR), 95% confidence intervals (CI), and p-values (p<0.05) were reported. Analyses were conducted in SAS Version 9.4. Results: Receiving HPV vaccination information from professional journals or publications was positively associated with attitudinal factors and willingness to train and administer the HPV vaccine (p<0.05). Agreeing that HPV vaccination recommendation (OR=1.95, 95%CI=1.14-3.35, p=0.015) and administration (OR=3.79, 95% CI=1.63-8.81, p=0.002) was in the dental professional's scope was positively associated with these outcome measures when other factors were held constant. Students with greater patient contact time (OR=4.47, 95% CI=1.14-17.58, p=0.032) and lower role conflict (agreed that HPV vaccine administration was in the dental professional's scope) had higher odds of willingness to administer the HPV vaccine when other factors were held constant (5.9, 95% CI=2.27-15.3, p<0.001). The major barrier to engaging oral health students in HPV vaccination efforts was role conflict. Conclusions: Informed oral health professionals were receptive to participation in HPV vaccination training and to administration of the HPV vaccine in their dental practices. Professional organizations and oral health programs should strongly support the role of oral health professionals in HPV oropharyngeal cancer prevention.

## 12

### Primary Prevention Across the Life Course: Findings from the Young Women's Breast Cancer and Media Study

**Klassen A**, Perera U, Grossman S, Martinez Donate A, Villanueva A, Flores Z, Leader A , Juon H

Introduction: Breast cancer is typically seen as a disease of mid-life, but growing evidence supports primary prevention throughout women's lives. Little is known about the salience of breast cancer prevention messages for younger women, especially those at risk for breast cancer disparities. Description: Our multi-phase exploratory project first analyzed a purposive sample of news and popular media messages on breast cancer aimed at young adults. We then used these mainstream and tailored media examples in 7 focus groups with Philadelphia-area African-American, Latina, Asian-American and sexual minority women age 21-30. Identity-concordant moderators explored knowledge, attitudes and practices regarding health in general and breast cancer specifically, and media credibility and usage patterns. Guided discussion of breast cancer-related media examples was used to explore audience interpretation and response to messaging. Responses to a brief structured survey, and transcribed audio-recordings of focus group discussions were analyzed. Findings: Participants had diverse levels of resources: 40% were born outside of the U.S., 37% were uninsured, and 37% had < high school education. Most used social media (i.e., 86% facebook, 71% Instagram), 83% read on-line news at least weekly, and 63% had searched on-line for cancer information. When asked about cancer prevention across the lifecourse, many young women expressed limitations on ideal health behaviors at their current life stage, due to economic constraints, or stressors related to school, job or family. Respondents had little knowledge of evidence supporting risk-reducing behaviors, such as breast feeding, diet and physical activity, or limiting alcohol. Although young women recognized the importance of risk reduction, most felt that behavior change would be more feasible, and more important, when they were older. Conclusions: Young women of all backgrounds and levels of access to information are not well informed about primary prevention of breast cancer. Planning for health behavior change during young adulthood appears highly salient, but must consider life roles, which widely differ by SES and culture.

## 13

### Association between health literacy and baseline breast density awareness in a health-system embedded intervention efficacy study

Knerr S, Bowles EJA, Wernli KJ, Schwartz MD, O'Neill SC

Purpose: Health literacy is the ability to perform basic reading and numerical tasks required to function in the health care environment. We examined the association between health literacy and mammographic breast density awareness among women participating in a breast cancer prevention trial. Methods: Women were members of an integrated health system where density information was available within mammography reports in an online patient portal. We used baseline survey data collected in 2017-18 to measure health literacy using a validated three-item scale. Outcomes included whether or not women had heard of breast density before the trial and, among women who had heard of breast density, correctly answered a question about its impact on mammography performance. We used logistic regression to calculate odds ratios (ORs) adjusted for age, breast density, numeric breast cancer risk, breast cancer family history, prior breast biopsy, education, race/ethnicity, and household income. Results: Trial participants (n=995; M age = 61.9 years) primarily identified as White (95%) and were college educated (73%) with household incomes over $60,000 (67%). Health literacy scores were highly positively skewed (median score=15, range 6-15) and 91% of women had heard of breast density before the trial. Among these women, 87% correctly responded that dense breasts make it more difficult to see cancer on a mammogram. Health literacy scores were associated with prior density awareness (OR:1.17; 95% CI: 1.01-1.36; p=0.032) in unadjusted, but not adjusted models. We found no association between health literacy and knowledge about density's effect on mammography performance in women who had heard of breast density prior to the trial. Conclusions: Even in the absence of a formal notification program, density awareness was high among women participating in screening mammography in an integrated health system. Health literacy may facilitate density awareness, a prerequisite to density-specific knowledge, but not be its primary driver in highly educated, insured populations.

## 14

### Smokers' engagement with phone-based cessation and basic needs interventions: A preliminary analysis

McQueen A, Caburnay CA, Roberts C, Kreuter MW

PURPOSE: A preliminary analysis of an ongoing 2x2 RCT to evaluate uptake of two interventions (Tobacco Quitline, Basic Needs Navigation) for low income smokers and identify differences in sample characteristics that explain any differential uptake in the phone-based interventions. METHODS: Baseline correlates of calls completed by 3 month follow up (end of intervention period) were examined for an initial sample of 587 participants. Everyone was assigned to a tobacco quitline program; 288 of those also were assigned to a Basic Needs Navigator. Navigators help resolve unmet needs (food, housing, utilities, etc). The Missouri quitline program involves 4 coaching sessions plus unlimited participant-initiated calls. Navigation calls were unlimited and initiated by either party, but usually weekly or bimonthly. Bivariate and multivariable analyses examined sociodemographic, smoking, and health correlates. RESULTS: Seventy percent of participants took at least one quitline coaching call; 40% took 2 or more (Mean=1.51, SD=1.48; Range 0-7). Of those assigned to navigation, 87.5% took at least one call; 78.5% took 2 or more (Mean=3.82, SD=2.71; range 0-13). Bivariate results showed that more quitline calls were taken by older adults, Black or White smokers vs. other race, unemployed, with kids living at home, without any chronic conditions, and those with greater dependence, years of smoking, prior quits and use of NRT. In multivariable analysis, only smoking variables remained significant. Bivariate results showed that more navigation calls were taken by older, Black vs. White adults, with higher income, who allowed smoking in the home, and greater years of smoking, previous quitline use, and chronic conditions. Multivariable results showed that only years smoked and chronic disease remained significant. CONCLUSIONS: Consistent with cessation motives, smoking and health variables remained significant correlates of intervention engagement. Having more chronic conditions may motivate smokers to engage in quit counseling but require less navigation if they receive similar assistance through case management programs. Future analyses with the full sample will examine interactions between study groups and effects of engagement (dose) on cessation at 6 month follow up.

## 15

### Informing Women About the Risks of Exposing Babies to Tobacco Smoke: Outreach and Education Efforts Using Facebook Boost Posts

Miller CA, Kim SJ, Bloom PN, Schwartz-Bloom RD, and Fuemmeler BF

Purpose of the Study Pregnant women's exposure to environmental tobacco smoke may cause changes in the DNA of their children, potentially leading to an increased risk for the development of ADHD. To communicate this information to the public, we created two types of posts on Facebook (i.e., a graphic/text-based post and a one-minute video) to educate on how this chain of risk can happen through generations via epigenetic events. We promoted the messages through Boost Posts paid advertisements on Facebook. The purpose of this study was to evaluate the feasibility and reach/engagement levels of these messages that were targeted to women ages 18-45 years with interests in pregnancy, prenatal care, or childbirth. Methods Three pairs of two states stratified by adult smoking rates (high, moderate, and low) were selected for this communication outreach effort. States within each stratified group were randomized to receive the graphic/text- or video-based post. We controlled the amount of the advertisement budgets ($200) to be consistent across states for the two-week promotion period. Results We reached approximately 60,000 people in three states (Georgia, Louisiana, and New Jersey) for the image/text-based post group. A total number of engagement (i.e., total likes, comments, and shares) with the graphic/text-based posts in these states ranged from 500 to 800. The promotion cost was $7 per 1,000 people reached. In states that saw the video post (North Carolina, Kentucky, and Massachusetts), we reached a total of 16,000 people. There was no engagement with the video post and the associated promotion cost was $40 per 1,000 reached. Conclusions Our findings support the feasibility of Facebook to expeditiously reach a large pool of a targeted audience at low cost. Results suggest that graphic/text-based posts may be a preferred channel (i.e., higher engagement at a lower cost), to disseminate health messages, compared to a video posts when using the Boost Post feature on Facebook for health education.

## 16-T

### Aversion to ambiguity of cancer screening and perceived benefits of mammography in a racially diverse sample of women

Acheampong T, Rodriguez CB, Tehranifar P

Purpose: Breast cancer screening guidelines have become increasingly complex and focus on personalized screening based on personal risk and preferences. This requires women to consider uncertain and conflicting recommendations to make screening decisions. Differences in aversion to ambiguous medical information may influence perception of mammography benefits, but this has not been adequately investigated amongst racial/ethnic minority women. We examined the association of aversion to ambiguity (AA) regarding cancer screening test with benefits of mammography (BoM) screening, and demographic variables in women of diverse ethnic and predominantly immigrant backgrounds. Methods: We used interview data from 686 women, aged 40-60 years, recruited during mammography appointments in NYC (78% Hispanic, 11% non-Hispanic black; 77% foreign-born). AA was measured using a 6-item scale capturing agreement with statements about obtaining a cancer screening test with conflicting recommendations (e.g., "Would avoid making a decision about the test"). The perceived BoM screening was measured using a scale representing perceptions of positive outcomes of mammogram (e.g., "Having a mammogram will help me find breast lumps early"). Multivariable linear regression models were used to assess the association between the BoM score, AA, age, nativity status, and education level. Results: AA was lower in women who were foreign-born, Hispanic, older and had lower educational attainment. In models adjusting for these characteristics, higher AA was associated with lower perceived BoM ($\beta$ =-0.3, 95%CI -0.6-0.0). Specifically, women who expressed willingness to receive ambiguous cancer screening test were significantly more likely to endorse perceived mammography screening benefits ($\beta$=0.8, 95%CI: 0.3-1.3). Foreign born women reported higher perceived BoM than US born women ($\beta$=0.7, 95%CI 0.4-1.1) after adjusting for differences in AA. Conclusions: Perceived BoM are associated with less aversion to ambiguous medical information and with willingness to undergo screening despite conflicting recommendations. In the growing discussion of uncertainty of breast cancer screening, aversion to medical ambiguity ambiguity may have important implications for making personalized screening plans.

## 17

### Uncertainty about oral cancer and the potential for social media interventions

**Arnold LD**, Muthukrishnan M, Siddiqui S, Nelson EJ

Purpose: To assess knowledge about oral cancer risks, symptoms, and screening among social media users and identify areas for intervention with a focus on smokers Methods: Residents of a Midwestern metropolitan area aged 18-65 were recruited via Facebook to take an online survey that assessed 12 validated oral cancer knowledge items, risk factors, and demographics. Associations between knowledge and smoking status were examined with Chi-square and ANOVA. Results: Of 285 participants analyzed, 66.7% were never smokers (NS), 16.8% were former smokers (FS), and 16.6% were current smokers (CS). There was no significant difference in overall oral cancer knowledge by smoking status. However, a large portion of respondents expressed uncertainty about risk factors, symptoms, and screening. There was uncertainty about the role of gender (43.5% unsure), drinking tea (33.7% unsure), and age (31.2% unsure) as risk factors. Respondents were uncertain about length of a screening exam (38.6% unsure) and if screening uses x-rays (46% unsure). A large portion also reported uncertainty about symptoms, including dizziness (56.9%), facial rash (55.8% unsure), painless ulcers (44.9% unsure), and persistent ulcers (30.2% unsure). Uncertainty varied by smoking status. Compared to NS, significantly more FS were unsure if dizziness (76.6% vs. 52.7%) or facial rash (72.9% vs. 51.1%) were oral cancer symptoms. Significantly more CS than FS identified painless ulcers as a symptom (57.4% vs. 31.9%). Importantly, significantly less CS knew that screening lasts only a few minutes compared to FS and NS (29.8%, 54.2%, 52.7% respectively). Conclusions: Uncertainty about oral cancer risks, symptoms, and screening was high in this population of Facebook users. Educational interventions aimed at reducing uncertainty may be a first step in increasing oral cancer prevention. The Community Guide recognizes digital media as an option for public health interventions, and social media has the potential to efficiently reach diverse populations. Thus, Facebook interventions may be one option to reduce uncertainty about oral cancer screening. Partnering such interventions with social media-based smoking cessation interventions may be an avenue for reaching individuals at higher-risk for oral cancer.

## 18

### HPV and HPV Vaccine Knowledge and Behaviors among Undergraduate Students

**Daniel CL**, McLendon L, Green CL, Anderson K, Beasley M, Pierce JY

Purpose The objectives of the study were to develop and administer an instrument assessing human papillomavirus (HPV) and HPV vaccine knowledge and behaviors among undergraduate students at a large, public university in the southeastern United States. Methods Using existing and newly crafted measures assessing demographics and the core items above, we developed an electronic survey using Research Electronic Data Capture (REDCap) software. We distributed the survey via email to undergraduate students at the University of South Alabama from August-September 2018. We calculated descriptive statistics and performed chi-square analyses to assess statistical differences by college year. Results Of 2,047 responses distributed across year (range: 18.3%-31.0%), mean age was 22.1 years (±6.0) with 1,394 (70.0%) female and 71.2% reporting as White. 892 (46.5%) reported HPV vaccine initiation; 324 (36.6%) reported series completion (36.9% unsure). Despite an "ineligible" option, rate of HPV vaccination decreased as college year increased (p<0.0001) but series completion saw a reversed trend (p<0.0001). Though few significant differences for HPV and HPV vaccine knowledge by year, all years demonstrated substantial gaps: ~25% per year incorrectly agreed HPV can only be transmitted by infected people expressing symptoms; >35% per year incorrectly agreed HPV vaccine is single dose; ~30% per year disagreed the vaccine can be given up to age 26. For vaccine influences, personal views/beliefs were most valued for higher level students; lower level students valued healthcare provider and parent recommendations (p=0.0022). Conclusions The HPV vaccine presents a unique opportunity for HPV-associated cancer prevention. Survey data revealed low HPV vaccine initiation/completion rates in this college population. Despite few differences by year, we determined substantial gaps in knowledge for both HPV and HPV vaccination. We found key influences on HPV vaccination intentions varied significantly by year, indicating need for multi-level strategies tailored to these. HPV vaccine emphasis at ages 11-12 should continue, with catch-up for older individuals. Increased, targeted education and HPV vaccine opportunities should be offered to undergraduates to improve rates and knowledge.

## 19

### Using Patient Portals for Cancer Research Recruitment, Enrollment and Engagement

Fleming PJ, Alishahitabriz A, Resnicow K, Shin Y, Jones RM, Flocke SA, Willens DE, Shires DA, Hawley ST, Tu SP, Lafata JE

Purpose: Patient portals tethered to electronic health records (EHRs) offer promise for enhancing research recruitment and provide a unique platform upon which to conduct cancer research. We report on our use of an online patient portal to recruit, enroll and engage primary care patients in a behavioral trial that is testing the effectiveness of a post-office visit colorectal cancer (CRC) screening decision support program. Methods: From June 2017-September 2018, we compiled EHR demographic data and paradata for invited trial patients. Eligible patients included those 50-75 years of age at average-risk for CRC with an activated online portal account, aligned to a primary care physician, and due for CRC screening as recommended by the US Preventive Services Task Force. Descriptive statistics and multiple logistic regression were used to summarize patient characteristics associated with trial recruitment, enrollment and engagement. Results: Of 4,145 patients who were sent a trial recruitment message, the mean age was 59 years (IQR, 52-65); 52.5% were White, 62.5% were female and 69.9% read the message. Among those who read the recruitment message (n=2,896), 45.9% expressed interest in the trial by viewing additional online information, 38.3% enrolled (83.6% of those expressing interest) and 24.7% completed the trial's baseline questionnaire - resulting in an overall enrollment rate of 26.8% and engagement rate of 17.0%. We found no statistically significant differences in who read the recruitment message or trial enrollment by age, race, or gender; however, Black patients (OR=0.79, 95% CI=0.65-0.95, P=0.014) and Asian patients (OR=0.49, 95% CI=0.31-0.77, P=0.002) were less likely to complete the baseline questionnaire than their white counterparts. Conclusions: Most patients who were sent a trial recruitment message read the message and a large majority of those who expressed interest in the trial ultimately enrolled. Post- enrollment, minority patients were less likely to engage in required trial activities. Additional studies are needed to increase our understanding of diverse patients' interactions with patient portals and thus the opportunities, limitations, and challenges of their use in the context of cancer research and more broadly.

## 20

### Culturally tailoring environmental risk breast cancer messages to enhance mother-daughter communication and promote risk-reducing behavior.

Fisher CL, Wright K, Rising C, Mullins D, Afanaseva D, Burke-Garcia A, Cai X

Researchers with the NIEHS-funded Breast Cancer Research Program (BCERP) have disseminated information about lifestyle choices (e.g., BPA or phthalates-free products) to reduce breast cancer risk, including a social media intervention teaming with "mommy bloggers" to disseminate evidence-based knowledge tailored to mothers and daughters. In addition to the intervention, we sought to understand how messages could be tailored to diverse groups asking women to review BCERP materials for feedback and to identify challenges encountered when talking about risk and lifestyle choices with family. We interviewed 51 "mommy bloggers" and readers. Women were ethnically diverse: 39% White; 30% Black; 22% Hispanic; and 3% Asian. Thematic analyses were separated by ethnicity for comparison. Women noted these strategies as critical to tailoring messages: 1) using diverse images, 2) heightening the need to protect family, 3) identifying the expert voice, and 4) making behavior change feasible. Although all groups described the importance of using diverse images, only Hispanic and Black women wanted images to blend culture. They noted that when pictures represented one race it did not convey that breast cancer risk is an issue for all women. Similarly, all women described the need to heighten the call for family members to protect one another, noting the importance of including men in images and messages. Still, Black women reported the importance of this strategy more than other ethnicities, stressing that men too are responsible for daughters' health. Women also noted several cultural challenges encountered when talking to family (e.g., mothers, grandparents) about lifestyle choices (e.g., eating fresh foods, not buying plastic). These included 1) respecting intergenerational norms (particularly within Hispanic families), 2) addressing skepticism and resistance (especially with older generations), and 3) reducing or preventing fear (notably with children). Findings provide strategies to better culturally tailor risk and health promotion messages directed at mothers and daughters. Future studies could tests strategies in promoting risk- reducing behavior among culturally diverse mothers and daughters at risk for breast cancer.

## 21

### Gender disparities in oral cancer knowledge

Muthukrishnan M, Siddiqui S, Nelson EJ, Arnold LD

Purpose: Gender disparities exist in oral cancer incidence and mortality, with men experiencing higher risk than women. Survival depends on cancer stage at diagnosis, and may be greatly improved with early detection. Lack of oral cancer screening knowledge may delay diagnosis and contribute to lower survival rates. The objective of this study was to assess gender disparities in oral cancer knowledge among adults in the St. Louis, Missouri metropolitan area. Methods: We recruited 425 non-institutionalized St. Louis residents, aged 18-65, to participate in an online survey via Facebook (07/2017-09/2018). Students (n=134), and records with missing data (n=4) were removed from the analysis, leaving 287 for analysis. Oral cancer knowledge was measured using 12 validated items. Chi-square and t-tests were used to compare differences in item responses between males and females, as appropriate. Results: Participants were more likely to be female (61.3%) than male (33.4%). Overall, the mean oral cancer knowledge score was 5.90 (range 0-12). Women were more likely than men to correctly identify three survey items regarding the signs of mouth cancer (an ulcer that does not heal, 97.6% vs. 83.9%; dizziness, 69.2% vs. 45.2%; and a rash on the face, 49.3% vs. 29.8%). Likewise, women were more likely than men to correctly identify four items regarding knowledge about checkups for oral cancer (checkups required if you wear a denture, 92.0% vs. 80.3%; screening performed via x-ray, 58.3% vs. 42.6%; screening can detect oral cancer at earlier stages, 96.8% vs. 88.2%; and screening only lasts a few minutes, 86.5% vs. 69.6%). The only item where men correctly identified risk more than women was that oral cancer is more common among elderly individuals (69.4% vs. 42.3%). Conclusions: Oral cancer incidence and mortality is more than twice as high for men than women. However, oral cancer screening knowledge is significantly lower among men than women. This highlights the need to improve oral cancer screening knowledge among higher risk groups, especially men prior to implementing screening interventions. Additionally, since oral HPV infection is more prevalent among men, increasing awareness of oral cancer risk factors among men may provide the greatest public health impact.

## 22

### Examining Patterns of mHealth Use Among Individuals Diagnosed with Cancer: Results from the 2017 and 2018 NCI Health Information National Trends Survey (HINTS)

Rising CJ, Oh A

Purpose. The purpose of this study was to determine whether pattern of mhealth use differs among individuals diagnosed with cancer versus those never diagnosed with cancer given the penetration of mhealth technologies in the US and relevancy of mhealth for cancer care and support. Methods. HINTS data (2017 & 2018; N=6789) were examined to characterize respondents from a nationally representative sample by reported mhealth usage patterns. Respondents ever diagnosed with cancer (n=1097) and those never diagnosed with cancer (n=5654) were categorized into 1 of 5 mhealth user types: nonusers (no health apps & don't track health; n=1861); nontrackers (have health apps & don't track health; n=508); app trackers (track health goals by apps; n=882); device trackers (track health by other devices, e.g., Fitbit, glucometer; n=840); and supertrackers (track health goals by apps & track health by other devices; n=1287). Data were weighted and analyzed in SAS using logistic regression. Results. Compared to those never diagnosed, respondents diagnosed with cancer were nearly twice as likely to be device trackers (OR=1.84, 95% CI=1.38, 2.44, p<.001) but less likely to be app trackers (OR=0.68, 95% CI=0.46, 0.10, p=.049). There were nonsignificant differences for all other patterns of mhealth use by cancer diagnosis. After sociodemographic and health-related covariates were included in regression models, cancer diagnosis no longer significantly predicted being a device tracker or an app tracker. Instead, being male, nonwhite, older, overweight/obese, having a chronic condition (e.g., diabetes), poorer perceived health, and not being a health information seeker predicted being a device tracker. In contrast, older age and having a chronic condition negatively predicted being an app tracker. Conclusions. mHealth may be particularly relevant to people diagnosed with cancer, however we found that diagnosed individuals' patterns of mhealth use were similar to usage patterns of those never diagnosed. Findings suggest that pattern of mheath use may be an important audience segmentation variable. Future mhealth interventions could consider acceptability and benefit of these interventions by pattern of use since characteristics of mhealth users varies according to their usage pattern.

# Poster Session Abstracts

## 23-T

### Variability in Smoking Cessation Practices: Results from a Multicentre Survey

**Salazar AS**, Sekhon SK, BJC Collaborative, James AS, Colditz GA

Purpose: Smoking cessation is an important strategy for reducing lung cancer. However, there is variability in the services provided by hospitals. We assessed the different smoking cessation strategies implemented among health systems involved in a multi-institution collaborative that serves a high-risk catchment area predominantly in Illinois and Missouri. Methods: We conducted a cross-sectional survey of 9 hospitals regarding each system's smoking cessation resources for patients. This included classes, counseling, technology-based solutions, medications, community engagement, and administrative resources including physician billing guidelines and electronic medical record integration. Qualitative data was analyzed thematically. Results: The response rate was a 100%. 5 sites had their own smoking cessation programs with the number of participants ranging from 11 patients to "over 700" and smoking cessation success rates fluctuating between 16.7% and 45.5%. 4 sites had staff solely devoted to smoking cessation, including counselors, social workers, nurse navigators, and community educators. Elements incorporated into programs included group sessions (80%), written materials (80%), tobacco quit lines (60%), individual sessions (40%), medications (20%), and formal presentations (11%). One site used technology-based solutions, i.e. phone apps, to promote cessation, and another recently integrated cessation modules into the EMR but with reported low use. Cited strengths at each system included one-on-one sessions, meeting with patients during computed tomography scans, community outreach events at workplaces, and group classes with guest speakers. Areas for improvement included increasing success rates, offering more free medications at outpatient visits, and training additional staff to offer smoking cessation counseling. Conclusions: To maximize the effectiveness of smoking cessation programs, it is important to initiate dialogue concerning the strengths and weakness of current practices at different sites. These qualitative study findings will help programs identify structures and approaches that would not only be suitable, but also beneficial to replicate in their respective system.

## 24-T

### Questions and concerns about HPV vaccine: A communication experiment

**Shah PD**, Calo WA, Gilkey MB, Boynton MH, Alton Daily S, Todd K, Robichaud MO, Margolis MA, Brewer NT

Objective. We sought to identify effective responses to parents' questions and concerns about HPV vaccine. Methods. In 2017-2018, we surveyed a national sample of 1,196 U.S. parents of children ages 9-17. We recorded brief videos of a pediatrician providing messages that addressed seven HPV vaccination topics that commonly elicit questions or concerns (e.g., recommended age). We randomly assigned parents to one of the message topics; parents then viewed four videos on that topic in a random order and evaluated the messages. Results. Parents were more confident in HPV vaccine when exposed to messages that addressed lack of knowledge about the vaccine (b=.13, p=.01), included information about cancer prevention (b=.11, p<.001), required a higher reading grade level (b=.02, p=.01), or were longer (b=.03, p<.001). Parents were less confident in HPV vaccine when exposed to messages that expressed urgency (b=-.06, p=.005). Analyses using HPV vaccine motivation as an outcome showed the same pattern of findings. Conclusion. This paper provides research-tested messages that providers can use to address parents' HPV vaccination questions and concerns about seven common topics. Important principles for increasing message effectiveness are to include information on the benefits of vaccination including cancer prevention and avoid expressing urgency to vaccinate when addressing parent questions or concerns. Additionally, providers may need to be prepared to have longer conversation with parents who express concerns about HPV vaccine, especially safety and side effects.

## 25

### Symptom management in medical populations: Addressing a critical issue in healthcare

Berg CJ, Vu HN, Li J, Yager KA, Getachew B

Purpose of the study: The recent policy and social norms shifts related to marijuana use provide a critical time for understanding how patient populations may be using marijuana for medicinal purposes. Moreover, recent literature has indicated that medicinal marijuana legislation may also have implications for opioid use and misuse, particularly relevant for individuals with medical problems that may have involved symptoms appropriately addressed with use of certain opioids. Thus, this study aimed to examine intrapersonal, interpersonal, and community-level factors related to use/misuse of marijuana and/or opioids among two highly relevant patient populations- people living with HIV (PLWH) and cancer survivors across the United States. Methods: Five hundred and eight (18 - 60 years old) PLWH and/or cancer survivors (within six months of completing chemotherapy, radiation, and/or surgery) residing in the United States were recruited via social media (specifically on Facebook and Reddit) ads between June and July, 2018. Eligible participants completed a one-time online survey hosted by surveygizmo. Results: The mean age of participants was 34.25 years (SD= 9.39; range 18-60); 52.2% were male, 26.8% Hispanic, and 41.1% racial minority (22.6% Black). Participants represented 42 states. Overall, 61.6% were PLWH, and 39.6% were cancer survivors. Among the participants, 28.7% reported using marijuana since their diagnosis, and 13.4% reported using opioids since their diagnosis. Among users of opioids since their diagnosis, 19.2% reported using it as prescribed by a doctor and 21.9% reported using it to treat pain despite it not being prescribed by a doctor. Among users of marijuana since their diagnosis, 63% reported having used marijuana on a monthly basis compared to 18.5% average monthly use before their diagnosis. Differences in use, reasons for use, and patterns of use existed between the two clinical populations in relation to both marijuana and opioids. Less than a quarter of participants had a medicinal marijuana card. Conclusion: These findings highlight the need to understand patients' understanding of the use of these drugs to address symptoms and to address the needs of patients in symptom management.

## 26-T

### E-cigarette Device Characteristic and Reasons to Use Predicting E-cigarette and Cigarette Use

Nicksic NE, Barnes AJ

Background: E-cigarettes are frequently used to reduce or quit cigarette smoking, yet many dual users of these tobacco products continue long-term use or revert to cigarette smoking. Further, the heterogeneous options of e- cigarette devices could prevent users from selecting a device that would assist in smoking cessation. The purpose of this study is to determine the use behaviors and e-cigarette device characteristics of dual users one year later. Methods: Data were obtained from adults (18 years and older) who completed Waves 2 (2014-2015) and 3 (2015- 2016) of a nationally representative longitudinal cohort, the Population Assessment of Tobacco and Health (PATH) Study. The final sample included 968 (representing a US population of 4,468,809) current, established dual users of cigarettes and e-cigarettes in Wave 2 who remained dual users (n=402), cigarette (n=422) or e-cigarette (n=88) users only, or quit using both products (n=56) by Wave 3. Weighted logistic regression tested associations between Wave 3 user groups and Wave 2 e-cigarette device characteristics, reasons to use e-cigarettes, and sociodemographic variables. Results: The sample was mostly white (80.2%), male (54.3%), 35-44 years old (23.3%), and had a high school education or less (45.6%). Compared to dual users across both waves, owning a device, high price paid, refilling e-cigarette with e-liquid, and changing voltage had decreased relative risk of being tobacco only users (p<0.05, all). Additionally, using e-cigarettes in the past 30 days when you could not use cigarettes had decreased relative risk of being tobacco only users (RRR=0.48, p<0.01) or quitting both products (RRR=0.45, p=0.02). Higher education was associated with Wave 3 e-cigarette only users (p<0.05, each). Dual users in Wave 2 who used e- cigarettes for reasons of acceptability, being social, flavors, less harm to themselves, affordability had decreased relative risk of being tobacco only users in Wave 3 (p<0.05, all). Conclusions: E-cigarette device characteristics can differ across long-term tobacco users, especially among dual users who transition to smoking cigarettes only. Determining which devices would help smokers quit tobacco use altogether and prevent long-term health effects would be vital in tobacco control.

## 27-T

**Clinicians' Perspectives on Barriers and Facilitators to Perinatal Hepatitis B Care as a Pathway to Preventing Liver Cancer Disparities**

Perera U, Cohen C, Evans A, Juon H, Turchi R, Klassen A

Purpose: Hepatitis B virus (HBV) is the most common serious liver infection and leading cause of liver cancer worldwide. Chronic HBV infection and liver cancer in Asian and African immigrants are among the most serious, but frequently neglected racial health disparities in the U.S. Health care providers play a crucial role in preventing perinatal HBV transmission, by providing perinatal HBV testing, maternal education and care for both mothers and neonates. The objectives of this study were to determine provider-level knowledge, barriers, and facilitators to care for HBV positive women and determine what tools might be most helpful in providing HBV care to women who are diagnosed during pregnancy. Methods: Ten audio- transcribed 30-minute semi-structured interviews with obstetricians, gastroenterologists, neonatologists, pediatricians, family practitioners and nurses were conducted using open-ended questions. Inductive content analysis was used to identify emerging themes in the data. Results: Clinicians were most likely to report patient-related barriers, including a lack of hepatitis B knowledge, stigma and misconceptions surrounding the disease, low language skills and health literacy levels, phobia of frequent bloodwork, lack of health insurance coverage, and lack of compliance to medication. Most frequently mentioned provider barriers include not having necessary patient educational materials in various languages, and among general practitioners, not seeing the need to refer patients to specialty care. Facilitators to care that were identified include both patient and provider level education on hepatitis B and the creation of perinatal hepatitis B materials in languages other than English. Conclusion: The barriers reported by clinicians have been used to highlight new potential intervention targets and tools to improve patient outcomes, including developing strategies to better educate providers at health centers and creating and disseminating patient literature in various languages. Findings will be used to inform the development of a questionnaire to be administered to women who are hepatitis B positive in phase two of the study to assess HBV knowledge, attitudes, beliefs, and barriers and facilitators to care.

## 28

**Development and formative testing of a web-based brief motivational intervention targeting frequent indoor tanning bed users**

Stapleton JL, Parmar V, Ray AE, Manne SL

Purpose of the Study: To describe the development and pilot trial results (acceptability and preliminary outcomes) of a web-based, brief motivational skin cancer intervention to reduce frequent indoor tanning bed use. Methods: The intervention, modeled after brief motivational interventions to reduce alcohol use among young adults, utilizes interactive questions/features to assess participants' perceptions and provide subsequent tailored personalized feedback. Content addresses perceived benefits and costs of tanning, discrepancies between costs of tanning and important values, and promotes sunless tanning alternatives and other behavior change strategies. Forty young adult women who reported indoor tanning at least 25 times in the past 12 months were randomly assigned to an intervention or waitlist condition with pre and post assessments. Intervention acceptability was assessed by an evaluation survey immediately following the web intervention. Preliminary outcomes were assessed at 3-months post baseline. Results: Study retention rates was high (75%) and participants provided positive intervention evaluations on several dimensions (e.g., interesting, understandable, useful) with means ranging from 8.76 to 9.36 (scale response values from 1 (least favorable) to 10 (most favorable)). Measures of message engagement and perceived value (e.g., the intervention made me think, the information said something important to me) were also favorable (means ranging from 1.03 to 1.58, response options from -2 (strongly disagree) to 2 (strongly agree)). Preliminary outcome analyses showed no differences in indoor tanning rates at follow-up between conditions. Increases in use of sunless tanning alternatives at follow-up were higher among intervention participants compared to controls (partial eta squared for time by condition intervention = .16 for use of sunless tanning lotions and .08 for spray tanning). Conclusions: Preliminary results provide evidence that the indoor tanning intervention is acceptable to participants and may promote uptake of sunless tanning alternatives among frequent indoor tanners.

## 29

### Types of Coping Strategies Among Adolescent and Young Adult Cancer Patients

**Waters AR**, Pannier S, Warner EL, Salmon S, Fowler B, Fair DB, Kirchhoff AC

Purpose: Adolescents and young adults (AYA) diagnosed with cancer ages 15-39 years old experience psychosocial challenges during treatment that can last into survivorship. This study measured the types of coping being used by AYA cancer patients to deal with stressors. Methods: A total of 53 current and former AYA cancer patients, ages 18-52 years, were surveyed at enrollment in the Huntsman-Intermountain Adolescent and Young Adult Program, which provides healthcare navigation services. The 28-item Brief COPE tool was used to identify and score the types of coping AYA patients use to deal with stress. Coping scores range from 1 (haven't been doing at all) to 4 (have been doing a lot). Brief COPE was used to identify 14 strategies that can be categorized as engagement with the diagnosis (positive coping) or disengagement from the diagnosis (negative coping). We examined statistical differences of mean COPE scores for each positive and negative strategy using t- tests by age and gender. Results: Study participants were 53.8% female with a mean age of 27.5 years old ($\pm$6.7); the most common diagnoses were Lymphoma (22.6%) and Leukemia (22.6%). Of the fourteen types of coping defined by Brief COPE, the highest mean coping scores for positive coping were for "Acceptance" (3.31 $\pm$0.68) and "Positive Reframing" (3.00 $\pm$0.77). The least frequently endorsed coping strategies for negative coping were "Substance Use" (1.13 $\pm$0.43) and "Behavioral Disengagement" (1.25 $\pm$0.44). There were no significant differences by age. However, females had a significantly higher mean coping score for "Denial" than males (male=1.11$\pm$.37 vs. female=1.39$\pm$.46, t=2.40, p=.02). Conclusion: AYA cancer patients and survivors most frequently used positive coping strategies. However, no coping strategies scored higher than a mean of 3.31 $\pm$0.68, which corresponds closer to "doing this a medium amount"than "doing this a lot", highlighting the observation that AYA cancer patients are using a variety of coping strategies. Coping with a cancer diagnosis at such a transitional time in AYAs" lives helps to mediate distress and optimism. Being aware of the frequently used types of both negative and positive coping among AYA cancer patients could contribute to strategies to improve support for this population.

## 30

### Cancer Mortality in Rural America: 1999-2016

Bolin J, Callaghan T, Ferdinand A, Towne Jr S, Akinlotan M, Primm K

Purpose: Our primary aim was to understand the scope of cancer mortality in urban and rural areas of the U.S over the past 18 years. Methods: We analyzed mortality associated with some of the most common cancer types in the U.S."breast, cervical, lung, prostate, and colon"over an eighteen-year period from 1999-2016 and explored the roles played by rurality and region. We utilized data from the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC). Results: We have available for reporting and discussion a total of 10 tables and figures showing rural v. urban differences in age-adjusted cancer mortality by region and across Census regions of the U.S. While lung cancer, prostate cancer, and colon cancer rates are higher in rural areas than urban areas, the reverse is true in breast cancer and cervical cancer. Census region also comes into play in the discussion of cancer mortality and rurality. For most of the cancers studied here, rates are highest in the South and lowest in the West with the highest rates typically seen in the rural South. Higher cancer mortality rates in the South and in rural America comport well with existing research on cancer across the United States. Even when cancer mortality is better in rural areas than urban areas, in the case of breast cancer, this study shows that rates are higher in the rural noncore South than rural noncore areas in any other region. Prostate cancer however is a notable exception. Prostate cancer mortality is higher in the rural West than anywhere else in the country, the only time the West holds that distinction here. Conclusions: This research highlights that even as cancer is the second leading cause of death in the United States, geographic factors play a critical role in the distribution of cancer mortality across the United States. For some common cancers  lung, prostate, and colon in particular rural areas have been struck particularly hard, with higher mortality rates in rural areas. For other common cancers' particularly those impacting women (breast and cervical cancers) rural areas appear to be performing better.

## 31

### Racial differences in breast tissue-specific epigenetic age

Lin N, Castle JR, Liu J, Shendre A, Wang C, Liu Y, He C

Epigenetic age is an indicator of biological aging and tissue specific. Emerging evidence suggests that female breast tissue ages faster than other parts of the body according to epigenetic age estimation using the "Horvath Clock" model. Compared with European American (EA) women, African American (AA) women have higher mortality rate despite low incidence rate, and they are more likely being diagnosed at younger age and with features that are more aggressive. Whether there are differences in biological aging in EA and AA breast tissue remains largely unknown. In addition, the Horvath method is based on the DNA methylation of 353 CpG loci on the outdated Illumina microarray platforms. The increasing availability of next-generation sequencing data calls for method development that uses DNA methylation sequencing data to estimate tissue-specific epigenetic age. We developed a new method to estimate breast tissue-specific epigenetic aging using next-generation methylation sequencing data and assessed the difference between epigenetic and chronological ages, known as epigenetic age acceleration, in 276 EA and 186 AA healthy women. DNA methylation profiles of approximately 3.3 million CpG sites were generated using the Illumina TruSeq Methyl Capture EPIC sequencing technology. Using an elastic net penalized regression model following the Horvath approach, we defined a new set of 247 clock CpGs specific to breast tissue in randomly divided training (n = 370) and testing (n = 92) data sets. We found that breast tissue-specific epigenetic age was positively correlated with chronological age (r=0.87; P<$2.2 \times 10^{-16}$). Interestingly, AA women showed an increased epigenetic age acceleration compared to EA women (beta=4.6 years, P=0.036). Further research is needed to determine whether epigenetic age acceleration in normal breast tissue is predictive of risks of breast cancer and subtypes.

## 32

### Live Phone Calls More Effective than Automated Reminders for a Direct-Mail Fecal Testing Program in Community Health Centers

Coronado GD, Thompson JH, Petrik AF, Leo MC, Nyongesa DB, Davis MM, Younger BM, Castillo ML, Escaron AL

Purpose: Our study seeks to raise rates of colon cancer screening in a Latino-serving community health center. Using patient-refined materials, we examined FIT completion rates following automated and live approaches in a 3-arm pilot pragmatic trial. Methods: Eligible participants were ages 50-75 years, not up-to-date with colon cancer screening, and had a clinic visit in each of the previous two years at either of two health center clinics. A total of 1,767 participants were randomized (1:1:1) to receive: a text alert, mailed FIT, and two automated phone call reminders (automated); a mailed FIT and up to three live call reminders (live); or the combination of text alert, mailed FIT, two automated call reminders, and up to three live call reminders (automated plus live). The format and content of the messages were selected using a patient-engagement approach, boot camp translation. We assessed FIT return rates in the three arms. Results: Among randomized participants (n=1,767), 553 (31.3%) completed a FIT within 6 months. Participants had a mean age of 59 years and 57% were female. FIT completion rates were 26.0% (automated), 32.3% (live), and 35.7% (automated plus live). Controlling for clinic, adults allocated to the live condition had a significantly higher FIT completion rate than those in the automated condition (Adjusted Difference = 6.3 percentage points, 95% CI [1.1, 11.4]), as did adults allocated to the automated plus live condition (Adjusted Difference=9.7 percentage points, 95% CI [4.4, 14.9]). FIT completion rates differed significantly by preferred language (English: 25.5%; Spanish 35.1%; Other 39.7%; p < .01); number of clinic visits in the past year (Yes: 33.9% vs. No: 21.2%; p < .01); and prior FIT testing (Yes: 45.1% vs. No: 17.1%; p < .01). No significant interactions were observed between treatment conditions and language, number of clinic visits, or prior FIT testing. Conclusion: Live call reminders, either alone or with automated alerts and reminders, outperformed automated approaches alone. Using multiple touchpoints and communication modes might have the greatest impact on FIT completion rates.

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## 33

**Multimorbidity and colorectal cancer screening in the Strategies and Opportunities to Stop Colorectal Cancer (STOP CRC) pragmatic trial**

Coronado G, Nielson C, Keast E, Petrik A, Suls J

Purpose: Chronic disease burden can influence patients' likelihood of participating in cancer screening, including colorectal cancer (CRC) screening. The literature is mixed about how best to measure chronic conditions (e.g., counts of conditions vs. severity) and their impact on cancer screening participation. Using data from a large pragmatic trial of CRC screening in federally qualified health centers (STOP CRC), we applied two comorbid indices to assess the association between chronic conditions and receipt of fecal immunochemical testing (FIT). Methods: Participating STOP CRC clinics (n = 26) were randomized to receive either training and facilitation for an electronic-health record enabled mailed FIT outreach program or usual care. Patients eligible for the STOP CRC intervention (n = 62,155) were aged 50-74 and overdue for CRC screening and had a clinic visit in the past year. Patients' diagnoses codes in the past year were used to calculate patient-level chronic disease scores using two measures: the Charlson Comorbidity Index (CCI) and the Chronic Illness and Disability Payment System (CDPS). We used logistic regression to assess the associations between the presence of chronic conditions and receipt of a FIT order and completion of a FIT, adjusting for demographic characteristics and health care utilization variables. Results: A total of 12,706 patients received a FIT within 3 months of order among 35,624 patients who received a FIT order (12,828 patients reached though intervention-specific activities, 22,796 reached through usual care only). Patients with CCI of 3, 4, or $\geq 5$ had lower odds of FIT completion than patients with a CCI of 0 (each OR $\approx 0.7$, p<0.05). Diagnoses of HIV (0.2% prevalence) or substance abuse disorder (11% prevalence) were associated with lack of FIT completion (OR = 0.7 and 0.8, respectively; p<0.05). All associations persisted after adjustment for number of clinic visits and were not altered by other adjustments. Conclusions: Our findings from two chronic diseases suggest that federally qualified health center patients who have multiple chronic conditions or who have a diagnosis of HIV or substance abuse disorders have a lower likelihood of completing a FIT than patients without these conditions.

## 34-T

**Does a history of cardiovascular disease affect colorectal cancer screening adherence among different race/ethnic groups?**

Castaneda-Avila MA, Lapane K, Jesdale B, Crawford S, Epstein MM

Purpose: In patients with cardiovascular disease (CVD), managing their CVD and preventive behaviors like colorectal cancer (CRC) screening are both essential for maintaining overall health, particularly among minorities who are at a higher risk of developing both conditions. The presence of CVD could reduce CRC screening utilization particularly given the complexity of CVD care. We examined whether having CVD is associated with suboptimal CRC screening practices, and whether the association varies by race/ethnicity. Methods: Using the Behavioral Risk Factor Surveillance System (BRFSS) data from 2016, we identified 226,274 US adults aged 50-75 years. CRC screening was categorized as being up-to-date, not-up-to-date, or never screened according to 2018 US Preventive Service Task Force recommendations. Multinomial logistic regression models assessed whether having self-reported CVD was associated with CRC screening practices adjusted for age, sex, race/ethnicity, marital status, binge drinking, smoking, depressive disorder, last time routine check-up, other cancer screening; additional analyses were stratified by race/ethnicity. All analyses were weighted using the recommended BRFSS methodology. Results: One-quarter of US adults had never been screened for CRC regardless of CVD status; rates varied by race/ethnicity: Hispanics (34%), non-Hispanic blacks (23%), and non-Hispanic whites (20%). Relative to those without CVD, participants with CVD were more likely to have suboptimal CRC screening utilization (Never screened adjusted Odds Ratio (aOR): 1.1, 95% Confidence Interval (CI): 1.0-1.2; Not up to date OR: 1.2, 95% CI: 1.1-1.3). Non-Hispanic blacks with CVD were more likely to not be up-to-date on CRC screening (OR: 1.2; 95% CI: 0.9-1.7), while non-Hispanics whites with CVD were more likely to have never been screened (OR: 1.1; 95% CI: 1.1-1.2). Conclusion: CRC screening is more often neglected by people with CVD compared to those without CVD, with some variation by race/ethnicity. These findings highlight the need for better understanding of factors that may influence CRC screening utilization among adults with CVD.

## 35

### Gleason grade progresses in a race-dependent manner

Creed JH, Awasthi S, Williams VL, Yamoah K, Gerke TA

Background: In patients who undergo radical prostatectomy, Gleason grade is assessed at biopsy and once more at surgical pathology. Upgrading from biopsy to pathologic Gleason occurs for 20-40% of men and has important treatment implications. Debate exists as to whether Gleason grade is a static tumor feature, implying that upgrading results from biopsy sampling variability. Conflicting evidence suggests that upgrading rates may be different in African American men (AAM) compared to European American men (EAM). Methods: We leveraged data from the National Cancer Database (NCDB), which contains records on 213,956 prostate cancer patients who underwent radical prostatectomy. Gleason upgrading was defined as an increase in pathologic Gleason category (<6, 3+4, 4+3, 8, 9-10) from biopsy Gleason category. Time to treatment (TTT) was calculated as the number of days between prostate cancer diagnosis and surgery. Relative risk ratios and 95% confidence intervals of upgrading per 30 day increase in TTT were calculated with Poisson regression. Multivariable models were stratified by race and adjusted for biopsy Gleason, age, and tumor size. Results: Upgrading was observed in 59,959 (28%) patients, and no differences were found in upgrading rates by race, age, or tumor size. TTT was significantly longer in patients with upgrading compared to those whose grade was stable or decreased (2.3 and 2.2 median months, respectively, Mann-Whitney $p < 2.2e-16$). In multivariable models, patients experienced a 1.39% increased risk of upgrading for each additional TTT month. Patients who underwent surgery within 60, 90, 120, 150, and 150+ days experienced an increased risk of upgrading by 10%, 12%, 13%, 13% and 15%, respectively, compared to those who had surgery within the first 30 days post- diagnosis. When stratified by race, AAM had an increased risk of upgrading for each month of TTT compared to EAM (3.30% vs 1.05%). Conclusions: Results from this study suggest that Gleason grade progresses over time, and that this progression is more pronounced in AAM. Such findings provide further evidence that prostate cancer in AAM is biologically distinct and uniquely aggressive.

## 36

### Multilevel health disparities in cancer mortality, 1969-2014: Uncovering the role of county-level persistent poverty

Moss JL, Pinto CN, Srinivasan S, Cronin KA, Croyle RT

Purpose. To determine the independent and interacting risks of cancer mortality associated with county-level persistent poverty, county-level metropolitan status, and individual-level race with cancer mortality rates in order to monitor geographic health disparities. Methods. Records from the National Death Index (1969-2014) were used to gather individual-level data on race/ethnicity and cancer deaths (breast and cervical (females only); prostate (males only); lung and bronchus; colorectal; oropharyngeal; stomach; liver and intrahepatic bile duct). These records were linked to participants' county of residence, which were classified as (a) persistently impoverished or non-impoverished and (b) metro or non-metro, using data from the U.S. Department of Agriculture. We analyzed trends in cancer mortality across these categories over the study period, including analysis of joinpoints and health disparities. Results. Mortality rates for most cancers were higher in impoverished than non-impoverished counties (range: 2% for colorectal to 52% for cervical) and for blacks compared to whites (range: 14% for lung and bronchus to 131% for cervical); however, differences in mortality by metropolitan status were mixed (range: -15% for stomach to 16% for cervical). Black individuals in impoverished counties had particularly high cancer mortality rates. Declines in cancer mortality over the study period were attenuated in impoverished compared to non-impoverished counties for colorectal (-47%), breast (-57%), and stomach (-19%) cancers (all p<.05). By 2014, absolute and relative health disparities in cancer mortality were apparent for almost all cancers, with higher mortality concentrated in impoverished counties. Conclusions. Disparities in cancer mortality for impoverished compared to non-impoverished counties were wide and enduring over the last 45 years. These differences interacted with other risk factors, including race/ethnicity and metropolitan status. Additional etiologic research is needed to inform interventions to improve cancer prevention and control in these vulnerable areas.

## 37

### The Role of Race and Patient Reported Symptoms in Regimen Adherence to Adjuvant Endocrine Therapy

Sheppard VB, **Sutton AL**, He J,
Hurtado de Mendoza A, Salgado TM, Dahman B

Background: Adjuvant endocrine therapy (AET) improves outcomes of hormone receptor positive (HR+) breast cancer (BC), yet many women fail to take AET as prescribed. This study aimed to examine the role of race and AET-related symptoms on AET regimen adherence in Black and White survivors. Methods Women eligible for the Women's Hormonal Initiation and Persistence (WHIP) study were diagnosed with non- recurrent HR+ BC and initiated AET within 18 months of their diagnosis. Trained clinical research assistants consented participants, abstracted medical records and conducted standardized surveys collecting individual (e.g., race, age), medication-related (e.g., hot flashes), lifestyle (sitting time, physical activity), interpersonal (e.g., communication) and psychosocial (medication beliefs) factors. Regimen adherence was scored using validated items to assess daily regimen behaviors and categorized as high vs. moderate/low adherence. Stepwise multivariable logistic regression was employed to test associations of factors with regimen adherence; five individual models were estimated per symptom domain (vasomotor, gynecological, etc.). Results The analytical sample included Black (n=160) and White (n=394) survivors. Sixty-two percent of women were taking Aromatase Inhibitors (AIs), while the remaining were on Tamoxifen; 63% reported high adherence. Black (vs. White) women reported more overall AET-related symptoms (p<0.001) and more symptoms for four of the five domains (e.g., vasomotor). In multivariable models, Black (vs. White) women, those taking AIs (vs. Tamoxifen), and women with more symptoms were less likely to be high adherers (p=<.05). Higher BMI (OR: 1.81; 95% CI: 1.27-2.91; p<0.01) and less sedentary time (OR: 1. 64; 95% CI: 1.11-2.44; p<0.05) were associated with higher adherence. Black women (vs. White women) were significantly less likely to adhere in all symptom-based models. Conclusion:  Race differences in AET adherence persisted after adjusting for symptoms and other factors. Interventions that prioritize Black women and symptom management are needed. Longitudinal studies are needed to disentangle relationships between lifestyle-related factors and adherence behaviors.

## 38

### American Indians persistently experience much higher incidence rates of gallbladder cancer than Non-Hispanic Whites: a systematic review and meta-analysis

Gianiorio AP, Mazza GL Borad MJ, Salomao MA, Samadder NJ, Roberts LR, Coppola KE, Wilkins JR, Newton C, **Yang P**

INTRODUCTION. Gallbladder carcinoma (GbCa), the most frequent malignancy of the biliary tract in the U.S., presents the greatest ethnic disparity in cancer incidence, with American Indians and Alaska Natives (AIAN) showing much higher rates than Non-Hispanic Whites (NHW). This disparity was first reported more than 55 years ago, with AIANs in Alaska and the Southwest U.S. experiencing the highest incidence rates. However, there is no up-to-date data showing any changes in the magnitude of this disparity. METHODS. We conducted a systematic review of 435 publications (1929-2018); performed a meta-analysis of the disparity across the U.S., Alaska, and Southwest U.S. (1962-2011); and zoomed in on Arizona (1995- 2014). We followed guidelines set forth by the Preferred Reporting Items for Systematic Reviews and Meta- Analyses (PRISMA) and employed Cochrane's RevMan 5.3 software. Both random- and fixed-effect models were applied in the analyses. RESULTS. Our three key findings comparing GbCa incidence rates between AIANs and NHWs are as follows: (1) all U.S. AIAN men and women had a 3- and 4-fold higher incidence rate, respectively; (2) Alaska and Southwest U.S. AIAN men and women had a 6- and 8-fold higher incidence rate, respectively; and (3) in both 1995-2004 and 2005-2014, American Indian Arizonans had a 5- to 7-fold higher incidence rate in both men and women, with a noticeable decreasing trend in women. There was significant heterogeneity but no apparent publication bias was identified from all models of our meta-analysis. CONCLUSION AND IMPLICATIONS. AIANs, particularly in the Southwest U.S. and within Arizona, are persistently experiencing 5- to 8-fold higher GbCa incidence rates; this appalling ethnic disparity is observed in both women and men. The short-term actions based on our findings include developing and disseminating educational materials to the AIAN communities and Indian Health Services hospitals; understanding the ethnic disparity at the pathological and clinical management levels, which may lead to enhanced clinical outreach efforts; and setting forth a focused research agenda with the objectives to pinpoint the top risk factor(s) and to reduce the incidence and mortality of GbCa in the highest-risk AIAN populations.

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## 39-T

Characterizing the role of multilevel social factors on rural cancer survivors' quality of life: Findings from the Illinois Rural Cancer Assessment

Carnahan LR, Zimmermann K, Hallgren E, Peña K, Nwigwe L, Watson K, Ferrans C, Molina Y

Purpose: There will be 18 million cancer survivors in the US by 2020. Although life expectancy has improved, rural residents, versus urban, experience disparities in quality of life (QOL). The purpose of this study is to characterize multilevel (contextual, network, interpersonal) social factors of rural survivors and to describe associations on mental (MHQOL) and physical health QOL (PHQOL). Methods: The statewide, cross-sectional Illinois Rural Cancer Assessment surveyed the health status and needs of adult, rural-dwelling cancer survivors. We used the Short Form Health Survey (SF-12) to assess the primary outcomes, MHQOL and PHQOL. We examined associations between contextual (county disadvantage, rurality), network (survivor-caregiver integration and demographics), and interpersonal (patient- provider communication (PPC), social well-being (SWB), intimate relationships) factors. Results: 139 rural survivors from 52 counties participated. Regarding context, mean county-level poverty and high school graduation rates were 15% + 5 and 89% + 4, and the median household income was $51K + 11K. Regarding networks, survivors reported on average 1.8 + 1.7 caregivers, 48% reported speaking to most of their network daily, and 70% had known most of their network for >6 years. Regarding interpersonal factors, 68% reported low/medium PPC, 70% were married, and SWB and relationship satisfaction scores were 19 + 5 (range 4-24) and 28 + 8 (range 1-35). In bivariate associations between social factors and QOL, SWB (B=.496, p=<.0001) and intimate relationships (B=.261, p=.004) were positively associated with MHQOL. In multivariate models, SWB (B = .469, p =<.0001) continued to be positively associated with MHQOL, but relationship satisfaction was not. There were no associations with PHQOL. Conclusion: This work suggests a relationship between interpersonal, but not contextual or network, social factors and rural survivors' MHQOL. Understanding determinants of QOL can aid intervention planning and implementation to improve long-term holistic health outcomes and reduce disparities among rural survivors. Given persistent disparities and limitations of individual-level interventions to improve QOL, continued exploration of network and contextual factors is warranted.

## 40-T

Code TOM: A Targeted Approach to Reduce the Disparity of Cancer in Firefighters Through Education and Prevention

Crank TN, McClure JM, Wheeler MS

Purpose Code TOM is a firefighter education and screening program created to reduce the disparity of cancer incidence and mortality in members of the fire service by improving awareness of risks, signs, symptoms and access to screening. Background Research published by the CDC demonstrates firefighters experience an overall 14% greater risk of a cancer diagnosis than the general population (Daniels, R., et al). Initial research indicates occupational exposure to carcinogens and cultural traditions of improper decontamination post-exposure are believed to be significant contributors to this increased risk. Methods Code TOM curriculum stemmed from the CDC study identifying the most common cancer tumor sites in firefighters. Education includes general cancer information, risk factors, signs and symptoms, and screening options for 9 most common diagnosis in firefighters. Code TOM also promotes the importance of establishing open dialogue about cancer screenings with a PCP, giving examples of how to start and continue the conversation. Code TOM concludes with routing firefighters to local free cancer screening opportunities, and referrals for additional support programs as needed, such as genetic counseling and tobacco cessation. Launched in June 2017, the program has been administered to ~1,545 firefighters across North Carolina, in urban and rural communities. The majority of participants were male (n=1344), paid/career firefighters (n=1190), and insured (n= 1302). Results Participants completed pre/post session testing. The average score for pre-test was 82%, and post-test scores averaged 90%. Additionally, 2 survey questions were asked regarding effectiveness and likelihood of behavior change resulting from the education. Of the 1031 Q1 answers, 99.9% (n=1030) reported the information provided was helpful. Of the 982 Q2 answers, 95.3% (n=936) reported they were likely to make a change to their healthcare routine as a direct result of the information received during the program. Conclusions Results of the project demonstrate targeted and specific firefighter cancer education improves knowledge of prevention and early detection methods for cancer. Data supports that the firefighters educated were positively impacted by information and resources provided.

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| 41-T | 42 |
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## 41-T

**Gender Differences in the Impact of Medicaid Expansion on Guideline-Recommended Colorectal Cancer Screening: Evidence from the Affordable Care Act**

Eom KY, Sabik LM

Purpose of the study: This study examined overall and gender-specific effect of health insurance expansion on guideline-recommended colorectal cancer (CRC) screening rates using the natural experiment of the Medicaid Expansion under the Affordable Care Act (ACA) in 2014. Methods: We used data from the Behavioral Risk Factor Surveillance System (2008-2016) for adults from 50 to 64 years in 39 states. We measured self-reported ever use of guideline-recommended CRC screening and whether the time since their most recent screening was concordant with guidelines. We employed difference-in-difference models comparing changes in CRC screening rates in 20 Medicaid expansion states before and after the ACA to changes in 19 states which did not adopt the ACA. We divided the post-ACA period into the early (2014-15) and late (2016-17) to account for possible lagging effect of the ACA Medicaid expansion. Results: We found no significant effect of Medicaid expansion on receipt of any CRC screening services in the early post-ACA period among adults whose household income was <138% federal poverty level. However, in this Medicaid-eligible population, the proportion of women had any CRC screening services increased by 16.8% points in Medicaid expansion states in the late post-ACA period whereas no significant effect was reported among males. Stratified analyses by screening modality showed that the proportion of women who had colonoscopy increased by 13.6% points in Medicaid expansion states in the late post period. No significant effect of Medicaid expansion was observed on receipt of FOBT or sigmoidoscopy in both genders. Conclusion: CRC is the fourth most common cancer among adults and the second leading cause of cancer deaths in the US. Despite increased CRC screening rates over time, disparities in screening by insurance status and other socioeconomic factors persist. However, the evidence of gender differences in CRC screening is equivocal. Our findings showed that health insurance expansion had a lagged but significant effect on CRC screening in Medicaid expansion states. A significant increase in CRC screening among women provided more evidence that barriers to CRC screening differ by gender and clinical practice to increase CRC screening need to be tailored by gender.

## 42

**Developing and implementing electronic health records-based intervention tools in a large NYC healthcare system to facilitate H. pylori eradication strategies for gastric cancer prevention**

Kwon S, Tan Yi-Ling, Pan J, Mann D, Chokshi S, Williams R, Zhao Q, Hailu B, Trinh-Shevrin C

Gastric cancer is the third most common cause of cancer mortality worldwide. Chinese Americans experience a disproportionate burden of gastric cancer mortality. The bacterium Helicobacter pylori (H. pylori) is the strongest risk factor for gastric cancer; H. pylori eradication through triple antibiotic therapy is the most effective prevention method. Clinician adherence to the American College of Gastroenterology H. pylori treatment guidelines is not high. Medication adherence to the complex treatment regimen is challenging, especially for Chinese New Yorkers for whom 61% have limited English proficiency and low health literacy. Purpose of the Study: Working with an advisory coalition of community and health care safety net provider stakeholders, we developed a health-systems level intervention using electronic health record (EHR)-based tools to facilitate H. pylori treatment strategies for gastric cancer prevention. Methods: We used a mixed methods approach to inform EHR tool development, including: 1) a comprehensive scoping review of the peer reviewed and grey literature on gastric cancer prevention programs for Chinese Americans; 2) 4 site workflow analyses, which consisted of ethnographic observations and key informant interviews with 5 providers for contextual data on organizational workflow, culture and practice; and 3) 15 key informant interviews with community-based stakeholders and former patients. Results: Findings indicated the lack of culturally and linguistically tailored H. pylori and gastric cancer prevention materials. Using an iterative process, we developed 3 EHR-based tools: 1) a H. pylori medication order set for the most common first and second-line therapies; 2) basic health education materials for the patient in English and Chinese; and 3) a follow-up reminder for testing in 2 months to the patient's primary care physician. Barriers and facilitators to implementation will be shared, including findings from utilization reports on patterns of use. Conclusion: There is a need to integrate system-wide EHR-based tools for underserved, vulnerable communities to enhance and sustain evidence-based practices for treatment adherence and cancer prevention to reduce H. pylori-related gastric cancer disparities for high-risk populations.

## 43-T

### Disparities in health information seeking behaviors and fatalistic views of cancer by sexual orientation: A nationally representative study of US adults

Langston ME, Fuzzell L, Lewis MW, Khan S, Moore JX

Purpose: Lesbian, gay, and bisexual (LGB) adults are at a higher risk of cancer from multiple sites. Although limited research exists to explain the disparity, we explored potential differences in access and utilization of health information, and cancer-related beliefs and behaviors. Methods: We used data from the 5th iteration of the Health Information National Trends Survey taken from January-May 2017. Using survey-weighted logistic regression we explored potential differences in health information seeking behavior, trusted sources of healthcare information, engagement with the healthcare system, awareness of cancer risk factors, cancer fatalism, cancer related health behaviors, and historical cancer screening between 117 LGB and 2857 heterosexual participants. Results: LGB participants were more likely to report looking for information about health or medical topics than heterosexual participants (adjusted odds ratio [aOR]: 3.12; 95% CI: 1.07-9.06), but less likely to first seek health information from a doctor (aOR: 0.17; 95% CI: 0.06 - 0.50) after adjusting for age, race, and sex. LGB persons were also less likely to report they trust receiving health or medical information from friends and family and more likely to be worried about getting cancer (aOR: 2.30; 95% CI: 1.04 - 5.05). Conclusions: Overall, our findings indicate a growing need for healthcare providers and public health promotion experts to produce tailored cancer prevention and control materials for members of sexual minority groups, but also more work is needed to understand barriers that LGB populations face in accessing this information and building informative social support networks.

## 44

### Urban and Rural Mammography Facility Responses to the NC Breast Density Legislation

Henderson LM, Marsh MW, Nyante SJ, Benefield TS, Pritchard M, Agans R, Lee S

Purpose: We sought to evaluate if rural and urban mammography facilities differ in their response to the 2014 NC breast density legislation. Methods: In 2017, we used the Tailored Design Approach to conduct a mailed 50-item survey to 156 NC American College of Radiology certified mammography facilities. The survey included questions about facility demographics, supplemental breast cancer screening services, and referral patterns. Using regression weight adjustments to account for non-response, we explored whether the legislation was being implemented differently based on facility urban-rural classification using t-tests and chi-square tests. Results: Overall, 94 mammography facilities responded (60.3% response rate). Facilities were 51% rural and 49% urban. Approximately 59% of rural and 69% of urban facilities reported offering supplemental breast cancer screening. A similar proportion of rural and urban facilities offered supplemental screening with digital breast tomosynthesis (DBT) (52.7% and 63.3%); however, more urban than rural facilities offered breast magnetic resonance imaging (MRI) (30.6% vs. 4.5%; p-value <0.001) and handheld ultrasound (25.5% vs. 15.7%; p-value=0.072). More urban than rural facilities base supplemental screening on patient breast density (57.4% vs. 32.8%; p-value <0.001), patient risk factors (62.8% vs. 26.3%; p-value <0.001) and referring physician recommendation (78.2% vs. 47.7%; p-value <0.001). In contrast, both urban and rural facilities reported similar supplemental screening based on patient request (41.0% and 45.3%) and reading radiologist recommendation (74.5% and 62.9%). All facilities report breast density findings in the patient result letter, but urban facilities were more likely to also report density findings in the final radiology report that is sent to the referring physician (76.3% vs. 58.7%; p-value=0.004). Conclusions: Urban facilities were more likely to offer supplemental screening services beyond DBT, such as breast MRI and handheld ultrasound; such differences may impact urban-rural breast cancer disparities. Communication between facilities, radiologists and referring providers is needed to allow for discussion of and if desired, referral to specific imaging modalities for women with dense breasts.

## 45

### Mapping Colorectal Cancer in Texas: Associations between Socioeconomic Factors and Late Stage Diagnosis, Stratified by Age at Diagnosis

**McGauhey KG**, Tortolero Emery SR, Cuccaro PM Vidoni ML

Background: Colorectal cancer deaths, 2nd highest among U.S. cancer deaths, are preventable through mass screening. In the US, several colorectal cancer screening methods are available and recommended for people aged 50 or older at average risk of colorectal cancer. Demographic disparities in colorectal cancer screening, incidence, and mortality are well described in the literature; however, demographic disparities for emerging age-based trends in colorectal cancer incidence and mortality are not well understood. The aim of this study is to explore the relationship between socioeconomic determinants of health and stage at diagnosis with colorectal cancer, stratified by age, among Texans diagnosed with colorectal cancer between 2005 and 2014. Methods: The Texas Cancer Registry, a department of the Texas Department of State Health Services, collected data through surveillance. Associations between socioeconomic variables and stage at diagnosis with colorectal cancer, stratified by age at diagnosis, were tested with multivariable logistic regression in univariable and multivariable models. Results were used to map of Texas counties with populations at increased risk of late stage colorectal cancer diagnosis using ArcGIS raster math. Results: Between younger and older strata of Texans, relationships differed between stage at colorectal cancer diagnosis and: race, insurance status, and census tract poverty level. Among older participants, those at risk of increased odds of late stage colorectal cancer diagnosis were non-Hispanic Black participants (OR=1.25) compared to White, participants with Medicaid (OR=1.38) or no insurance (OR=1.39) compared to privately insured, and participants who lived in census tracts with greater than 5% poverty levels compared to census tracts with 0-4% poverty. Among participants aged 18-49, those with Medicaid had higher odds of late stage colorectal cancer diagnosis as compared to privately insured participants. Conclusion: Associations between socioeconomic factors and late stage colorectal cancer differed between age-based strata. Information on socioeconomic factors associated with increased odds of late stage diagnosis was mapped to identify niche county populations at elevated odds of late stage colorectal diagnosis.

## 46

### A Patient Navigation Tracking Log: Results for Diagnostic Colonoscopy Completion after Abnormal Fecal Immunochemical Test (FIT)

Nodora J, Bharti B, Hernandez M, Garcia-Bigley F, Marquez J, Ramers C, Arredondo E, Gupta S

Purpose Individuals with an abnormal fecal immunochemical test (FIT) as part of colorectal cancer (CRC) screening who do not complete colonoscopy have a 2.5-fold increased risk for cancer death. Barriers to colonoscopy uptake after an abnormal FIT vary among different social and racial/ethnic communities. Our goal is to report the actions and outcome of the barriers faced largely by Hispanic/Latino patients in a federally qualified health center (FQHC) in San Diego California. Methods Patients were referred to a FQHC bilingual patient navigator (PN) in San Diego's predominantly Latino communities. Patient navigation was primarily completed via telephone including education, emotional support, and scheduling. The goal of CRC screening navigation is completion of diagnostic colonoscopy following an abnormal FIT. The navigation barriers and PN actions were tracked and documented using a PN log. Results During the period of March 2017 to June 2018, 123 patients at the participating clinic had an abnormal FIT. The participants were on average 60 years old Latinos (88%), mostly female (60%), preferred Spanish as primary language (76%) and were Medicaid insured (82%). Four were not eligible for navigation, as they had already completed the colonoscopy, leaving 119 navigation eligible patients. Of the 119, all were contacted at least once; 71 were navigated by the PN. Among the persons who received assistance (i.e., all those who were navigated) the most common barriers were lack of social and practical support (16%), financial difficulties (12%) and inadequate insurance (12%). Among the 71 navigated patients, the rate of colonoscopy completion was 41%. Eleven percent declined services because they were not concerned with the abnormal FIT, and 20% declined services due to lack of funding for a diagnostic colonoscopy. The loss to follow up rate was 27%. Conclusions Completion of diagnostic colonoscopy following navigation (41%) is low and can be improved. The lack of support is a barrier a PN can address; inadequate health insurance is a significant challenge. The primary reason for diagnostic colonoscopy non-completion is lost to follow-up (27%).

## 47

**Does perceived rurality contribute to health disparities and rural health: The development of Rural Perception Scale**

Onega TL, Kim SJ, Alford-Teaster JA, Schiffelbein JE, Adachi-Mejia AM

Purpose: There is increasing research attention on enhancing health equity, especially for underserved rural populations. Often with lack of access to resources, knowledge diffusion, and geographical isolation, people living in rural areas experience poorer health outcomes and lower cancer screening rates than their urban counterparts. Validated measurement of rural perception is a missing, but critical link in tying rurality to health behaviors/exposures and outcomes. We developed a psychometrically sound survey scale that assesses key dimensions of perceived rurality. Methods: To assess perceived rurality, we conducted systematic reviews and adapted survey items measuring perceived isolation, loneliness, attitudes toward rural people/living in rural areas, attitudes toward living in urban areas, and perceived social capital. We leveraged a crowdsourcing platform and social media paid advertisements to recruit residents in rural states (NH, VT, KY) in the Fall of 2017. We measured an array of demographic characteristics as well as cancer-related (HPV, cancer information seeking), and other health-related questions (stress, sleep, and opioid use). Results: For this analysis, we included VT and NH respondents (N=698) to cover a geographically contiguous area. Mean age was 42.4 years, nearly half (49.1%) of respondents had some college education, and median annual household income was between $35,000 and $50,000. Explorative and confirmatory factor analyses, and measurement models in the structural equation framework revealed four latent constructs (R2=.64), including "sense of connected community", "positivity toward rural living", "self-identity with rural people", and "perceived potential to grow". Good items loadings (coefficients >.60) and good model fits were confirmed, CFA=.98, NFI=.98, RSMR=.08. Also, there were significant subgroup differences in rural perceptions by demographic characteristics (e.g., education, house hold incomes) and geographic characteristics of residential areas (e.g., zip-code based rural/urban designation). Conclusion: We examined the psychometric properties of rural perception questionnaires and identified four key sub-factors that explain how people in rural states perceive rural environments and rural life styles.

## 48

**Intakes of calcium and vitamin D, sun exposure, and breast cancer subtypes among African American women**

Qin B, Xu B, Yao S, Ji N, Pawlish K, Llanos AAM, Demissie K, Ambrosone CB, Hong CC, Bandera EV

Background: Darker skin complexion reduces cutaneous synthesis of vitamin D upon sun exposure. This, along with the tendency of African Americans (AAs) to consume less vitamin D and calcium, puts AAs at risk for vitamin D and calcium deficiency. However, data are limited on the associations of these factors with breast cancer (BrCa) subtypes among AA women, who have a disproportionately high incidence of estrogen receptor negative (ER-) BrCa. This study aimed to evaluate the impact of calcium intake and vitamin D exposure (through food, supplements and sunlight) on the risk of BrCa subtypes among AA women. Methods: We evaluated these associations among AA BrCa cases and controls (1,724 and 1,233, respectively) in the Women's Circle of Health Study (WCHS) and the Women's Circle of Health Follow-Up Study (WCHFS). Cases were identified via rapid case ascertainment in metropolitan New York City and New Jersey, and controls via random-digit-dialing and community-based recruitment. Multivariable polytomous logistic regressions were used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) of ER+ and ER- BrCa vs. controls, and multivariable logistic regressions for triple negative (TN) BrCa. The ORs from each study were pooled to obtain a summary estimate using an inverse variance-weighted random-effects model. Results: Calcium or vitamin D intake from food was not associated with risk of BrCa subtypes in the pooled analysis. For supplemental vitamin D intake, which was collected in WCHFS only, intake of <800 IU/day (vs. non-users) was associated with decreased risk of ER+ BrCa (OR=0.68, 95% CI: 0.50-0.94) and TN BrCa (OR=0.54, 95% CI: 0.33-0.89); intake of >800 IU/day was not associated with risk of BrCa subtypes. More daylight hours spent outdoors in a year predicted lower risk of ER+, ER- and TN BrCa [comparing highest vs. lowest quartile: OR=0.43, 95% CI: 0.29-0.61, p-trend: <0.001; OR=0.43, 95% CI: 0.27- 0.68, p-trend: <0.001; OR=0.52, 95% CI: 0.30-0.91, p-trend: 0.02, respectively]. Conclusions: Our findings suggest that a moderate intake of supplemental vitamin D may decrease ER+ and TN BrCa risk and more sun exposure may decrease BrCa risk among AA women, including more aggressive subtypes, ER- and TN BrCa.

- T *Denotes Trainee*

## 49-T

### Assessing Hepatitis C Screening Completion Rates Using Electronic Medical Records from the University of South Florida (USF) Health System

**Duong LM**, Reich RR, Kasting ML, Vadaparampil ST, Roetzheim RG, Rathwell JA, and Giuliano AR

Purpose: CDC recommends one-time hepatitis C virus (HCV) screening for baby boomers (born 1945-1965) as they have the highest prevalence of any birth cohort. Despite these guidelines, HCV screening test completion rates remain low (11.5%-14.1% based on 2013-2016 National Health Interview Survey estimates). We evaluated the proportion of patients who complete HCV screening when it is ordered and describe socio-demographic characteristics associated with HCV screening test completion by birth cohort. Methods: HCV screening estimates for adults treated by USF Health System from August 2015-July 2017 were assessed using electronic medical records (EMRs). Frequency distributions were computed on socio-demographic characteristics associated with HCV test completion stratified by birth cohort and p-values were calculated using chi square and Fisher-s exact tests. Analyses were stratified by year screened. Results: Analyses included 65,114 adult patients. In year 1, HCV screening rates were low. Four percent of baby boomers had screening ordered compared to 12.9% in year 2. Overall, among baby boomers, 11.3% had a HCV test ordered. In year 1, the lowest rates of test completion were among those born before 1945 (50.0%). Among baby boomers, 65.9% completed the HCV test compared to 71.0% among those born between 1966-1985, and the highest completion rates of 82.5% were observed among those born after 1985. Similar percentages of test completion were observed in year 2. Only two-thirds of the target population (baby boomers) completed HCV screening when it was ordered (final HCV screen prevalence of 3.9% [year 1] and 12.7% [year 2] with high risk patents removed). High risk is defined as HIV+, history of liver cancer, history of hepatitis, and lived with someone with hepatitis) from the analyses. Sociodemographic analyses included high-risk patients. In year 1, among baby boomers, non-Hispanic blacks had lowest completion rates (58.2%) while in year 2 Asians had the lowest (68.9%). In general, high risk patients were more likely to complete screening compared to average risk patients. Conclusions: Interventions are needed to not only increase HCV screen test ordered but to also address poor follow-through with completing the test when it is ordered.

## 50

### Geographic Disparities in Lung Cancer Screening in the U.S.

**Eberth JM**, Odahowski C, Zahnd WE

Purpose: The purpose of this study is to highlight geographic differences in eligibility for and utilization of low- dose computed tomography (LDCT) screening for lung cancer in the United States (U.S.) Methods - We used data from the 2015 National Health Interview Survey (NHIS), a population-based national survey disseminated by the CDC, to identify geographic differences in LDCT screening eligibility and utilization. We used a series of questions related to smoking history and screening utilization to define LDCT screening eligibility by the 2013 USPSTF guidelines: current or former smoker who quit within the past 15 years, ages 55- 80, and ≥30 pack-year smoking history. We used Urban Influence Codes developed by the US Department of Agriculture to designate all counties in the U.S. as urban (metropolitan) or micropolitan/rural. Results : We found that 77% of the LDCT screening eligible population in 2015 lived in urban areas, while 23% lived in micropolitan/rural areas. Despite more screening centers located in urban areas, we found lung cancer screening uptake was not significantly different between urban (3.89%) and micropolitan/rural residents (3.72%). When compared by U.S. Census regions, over 40% of the screening eligible population lived in the South followed by 26.16% in the Midwest, 17.88% in the West, and 15.51% in the Northeast. The Northeast had the lowest share of the screening eligible population but had the highest screening utilization at 10.11% (South: 3.51%, Midwest: 2.18%; West: 1.58%). Conclusions: Our descriptive analysis showed significant geographic disparities in LDCT screening uptake. Despite having the smallest share of LDCT-screening eligible individuals, uptake in the Northeast was 3-5 times higher than other Census regions. Our presented descriptive analysis is the only population-based assessment of LDCT screening uptake among rural populations. Up-to-date and geographically comprehensive surveillance data can inform cancer control efforts. Population-based surveys should be enhanced to better surveil the uptake of LDCT screening across geographies. This is especially important for lung cancer which has notable rural-urban and regional disparities.

## 51-T

### Prevalence and Determinants of cervical cancer screening using co-testing with cervical cytology and HPV testing among eligible women in Texas

Fokom-Domgue J, Cunningham SA, Yu RK, Shete S

Background: In the US and Texas, recommended options for cervical cancer screening in women aged ≥30 years include cervical cytology alone or a combination of cytology and HPV testing (co-testing). While there is a body of evidence suggesting that co-testing may be a preferable screening option in this group of women, little is known about the characteristics of women who benefit from screening with co-testing. In this population based study, we describe differences between women screened by co-testing versus cytology alone, and examine socio- demographic characteristics, personal and family medical history, mental and physical health, and perceived risk of cancer as potential determinants for cervical screening uptake with co-testing in Texas. Methods: Between February and March of 2018, a cross-sectional multistage area probability design-based survey was administered to a representative sample of Texas residents. Of the 1,348 female respondents, 572 women aged 30 years or above were included in this analysis. Population-weighted percentages were used to compare characteristics between groups, and weighted survey logistic regression was used to identify determinants of screening uptake with co-testing. Results: In this population, 273 (44.8%) and 242 (45.5%) women reported being screened by co-testing and cervical cytology alone, respectively. Women in the co-testing group were younger (mean age: 48.4 vs 51.7 years), more often Hispanics (33.9% vs 24.0%), living more frequently in urban areas (52.1% vs 45.2%), using more frequently hormonal contraception (83.9% vs 75.4%), more frequently immunized against Hepatitis B virus (56.7% vs 28.9%) and Human Papillomavirus (13.0% vs 1.5%), more frequently having an annual income ≥ $75,000 (32.1% vs 21.6%), than women in the cervical cytology group. In the multivariable analysis, women with a younger age (OR: 0.93, 95% CI: 0.91-0.95), lower income (OR: 0.49 (0.25-0.95)), personal history of any cancer (OR: 3.59 (1.53-8.41)), and history of HBV vaccination (OR: 2.41 (1.48-3.92)) were more likely to be screened with co-testing than to be screened with cervical cytology alone. Conclusion: Among women who have ever attended cervical screening in Texas, certain groups are more likely to get screened with co-testing.

## 52

### Racial differences in lung-RADS in the National Lung Screening Trials: A Propensity Score Matching Approach

Juon HS, Strong C, McIntire R, Unger M, Barta J

Rationale: Lung cancer continues to be the leading cause of cancer deaths in the United States. While lung cancer incidence and mortality rates have decreased for all races, major disparities persist among Blacks and Whites with early stage lung cancer. In the landmark National Lung Screening Trial (NLST), low-dose computerized tomography (LDCT) screening reduced lung cancer death by 20%. Moreover, screening with LDCT had a greater impact on reduction of lung cancer mortality in Blacks than in Whites in the NLST. However, in the NLST, patient baseline characteristics between Whites (90.9%) and Blacks (4.5%) are not comparable. Few studies have addressed the impact of race on positive results of LDCT screening. The purpose of this study is to examine racial differences in lung-RADS using propensity score matching (PSM). Methods: Approval for this project was obtained from the NCI's Cancer Data Access System on October 16, 2017 (NLST-361). The NLST established a study population of 53,452 participants between the ages of 55-74 with at least 30 pack-years of smoking. We used PSM method to obtain a matched sample of Blacks and Whites with similar distribution of matching variables (age, gender, education, smoking status, marital status, BMI, family history of lung cancer, diagnosis of COPD). PSM was conducted using psmatch2 in Stata. Lung-RADS categorized into a binary outcome (0=negative; 1=positive). Multivariate logistic regression was used to estimate the effect of race on lung-RADS results. Results: Of a total of a LDCT arm of the NLST (n=26,722), 26,309 received their initial screening. A matched sample was selected, using k nearest neighbor matching (k=2) within a caliper of width of 0.01. The matched sample was composed of 1153 Blacks and 2071 Whites. In regression analysis, Blacks were 34% less likely to have positive results of Lung-RADS than Whites using the matched sample (OR=0.66, 95% CI= 0.53-0.84). Conclusions: In consideration for widespread use of LDCT screening in clinical practice, the definition of a positive result in LDCT screening is needed for the appropriate management of positive screening results. This suggests that more research is needed to explore racial disparities on the positive results of LDCT among vulnerable populations.

## 53

### Decomposing socio-economic disparity in the use of colonoscopy among Insured Elderly Population: Comparison of pre- and post-ACA Disparity

**Lee M**, Adjei Boakye E, Jenkins WD

Purpose of the study: Colonoscopy is an evidence-based method for colorectal cancer (CRC) prevention and treatment, but there exist significant disparities in its use among the elderly. The objectives of this paper are to: a) examine income-related factors in CRC screening in the United States before and after implementation of the Affordable Care Act (ACA), and b) quantify the contributions of different factors in explaining observed disparities in colonoscopy use by income. Methods Five cycles (2008, 2010, 2012, 2014, and 2016) of Behavioral Risk Factor Surveillance System data for individuals aged 65-75 years were utilized. A Concentration Index (CI), which provides a summary measure of socio-economic disparities, was calculated before and after ACA implementation. Decomposition analysis then examined the relative (%) influence of individual factors (e.g. education, smoking status) associated with income disparities in colonoscopy use. Results Income-related CI decreased from +0.1935 to +0.1813 (pre- to post-ACA), indicating a diminishing influence of income on screening use, though increased use among those with higher incomes remains. Decomposition analysis showed that relative influence of income as a factor increased pre-/post-ACA (from contributing 53.8% of the income disparity to 78.6%), while other factors decreased in relative influence (e.g. college education from 30.6 to 21.4%) and some were unchanged (e.g. exercise past 30 days from 13.9 to 14.8%; and non-smoking status from 11.1% to 11.0%). Conclusions We found that the ACA's removal of financial barriers is associated with the observed decrease in colonoscopy use disparities across income levels. While other factors are relatively less important now, income has become as increasingly important single factor influencing colonoscopy use across income levels. Interventions aimed at further reducing disparities should focus on factors associated with lower income that present screening barriers and how they might be addressed. Policy makers should focus on the reduction of further income-related financial barriers, such as lack of paid time off or flexible appointment hours, in the use of colonoscopies among insured elderly.

## 54-T

### Screening for Lung Cancer: Using Data to Set County-Level Prevention Priorities

**Sekhon SK**, Salazar AS, Humble S, James AS, Colditz GA

Purpose: Although many factors contribute to lung cancer disparities in the United States, the number one modifiable risk factor is tobacco use. Rates of smoking are known to differ by state, but less information is available regarding within-state variability. We assessed county-level tobacco use with the goal of better targeting public heath efforts within the catchment area of a multi-institution collaborative spanning Iowa, Arkansas, Illinois, Kansas, and Missouri. Methods: Using individual-level self-reported smoking data from the 2011-2012 Behavioral Risk Factor Surveillance System (BRFSS) and population estimates from the 2010 U.S. Census, we created a multilevel reweighted regression model to estimate the predominance of tobacco use among those between the ages of 55 and 77, and eligible for lung cancer screening. For counties with less than 50 eligible respondents, we used synthetic estimation, which calculated prevalence by multiplying statewide BRFSS figures by the population within a country and aggregating over the subgroups to obtain county-specific rates.Results: The overall estimated rate of smoking in the catchment area was 19.2%, significantly higher than the nationwide average of 15.5%. Across counties, the prevalence of tobacco use ranged from 3.4% to 25.2%. In Missouri (n=91 counties), the average county-level incidence was 20.7%, with variability ranging from 7.21% to 23.9%. In Illinois (n=50), the mean was 18.9% with a range of 12.6% to 25.2%. In Kansas (n=32), the average was 15.5%, but counties fluctuated between 3.4% to 20.1%. In Iowa (n=5), prevalence ranged from 18.7% to 20%, and in Arkansas (n=3), prevalence ranged from 9.45% to 20.6%. Conclusion: There is significant within-state heterogeneity in the county- level prevalence of tobacco use. Since state-level information masks the variability that exists, assessing and monitoring county-level disparities in tobacco use and those eligible for lung cancer screening should guide public health efforts to increase screening and, therefore, reduce lung cancer mortality. Future studies should focus on developing effective multilevel strategies for tobacco control interventions to substantially decrease the prevalence and eliminate geographic disparity of use.

## 55

### Common genetic variations in the calcium sensing receptor (CaSR) gene, plasma 25-hydroxyviamin D and aggressive prostate cancer in the North Carolina-Louisiana Prostate Cancer Project (PCaP)

Zheng J, Xiao F, Bensen JT, Antwi SO, Arab L, Fonthan ET, Johnson CS, Mohler JL, Smith GJ, Su J, Taylor J, Zhang H, Woloszynska A, **Steck SE**

Purpose: We evaluated 29 functionally relevant and independent SNPs with minor allele frequency>0.05 in the calcium sensing receptor (CaSR) gene in relation to high aggressive prostate cancer and examined their interactions with plasma vitamin D levels among African-American (AA) and European- American (EA) men using data from the North Carolina-Louisiana Prostate Cancer Project (PCaP). Methods: The sample consisted of 217 AAs and 187 EAs with histologically-confirmed diagnosis of high aggressive prostate cancer as cases, and 307 AAs and 470 EAs with low aggressive prostate cancers as the comparison group. Multiple logistic regression was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) for high aggressive prostate cancer associated with each CaSR SNP. The cross-product of high- vs. low-level plasma 25(OH)D and continuous minor allele number of each CaSR SNP was added in the logistic regression model to assess the interaction. Results: Among AAs, the minor alleles of CaSRrs1501898 and CaSRrs13324814 were associated with 40% (OR=0.60, 95% CI=0.37-0.97) and 31% (OR=0.69, 95% CI=0.51-0.93) reduced odds of high aggressive prostate cancer, respectively, while CaSRrs2036399 minor allele increased high aggressive prostate cancer by 1.5-fold (OR=1.52, 95% CI=1.05-2.21). Among EAs, the only significant association was seen for the CaSRrs3863977 minor allele (OR=0.73, 95% CI=0.55-0.96). However, none of the SNPs reached statistical significance after adjusting for multiple testing using false discovery rate method. Among AAs, the minor allele of CaSRrs1354162 was associated with increased odds of high aggressive prostate cancer among subjects with low-level plasma 25(OH)D but not among subjects with high-level 25(OH)D (P-interaction=0.05). We did not observe any significant interaction effects between plasma 25(OH)D and SNPs among EAs. Conclusions: Three of 29 SNPs in the CaSR gene were found to be associated with high aggressive prostate cancer among AAs and one among EAs, but results were not statistically significant after adjusting for multiple testing. There was little evidence of interaction between CaSR SNPs and plasma 25(OH) D levels in relation to high aggressive prostate cancer in this racially diverse population-based study.

## 56-T

### Breast Cancer Treatment and Survival for Women with Autoimmune Diseases: Findings from a South Carolina Retrospective Cohort Investigation

Truman S, Adams SA, Eberth J, Ortaglia A, Breneman C

PURPOSE Autoimmune diseases (ADs) are among the top ten leading causes of death for women under the age of 65. These diseases present both tumor promoting and tumor suppressing factors, however, little is known regarding cancer survival and treatment among AD patients. This study aimed to explore the effects of varying cancer treatment regimens in relation to breast cancer survival among AD and non-AD patients. METHODS Women diagnosed with breast cancer (BrCA) between the years 2002 to 2010 were identified through the South Carolina Central Cancer Registry and linked to administrative databases. We identified 2928 BrCA patients of which 599 had an AD. Kaplan Meier and Cox regression models were used to test for associations between AD and survival within varying levels of cancer treatment modalities. RESULTS Among patients taking chemotherapy, BrCA survival was significantly greater for those with AD compared to those without an AD (92% vs. 82%, respectively, p-value < .01). However, AD patients who did not receive chemotherapy had a significantly lower survival compared to non-AD patients (87% vs 97%, respectively, p- value < .01). A similar finding was observed among patients not receiving radiation, with a survival rate of 88% and 91% for AD and non-AD patients, respectively. CONCLUSION A small survival advantage was noted among AD patients compared to non-AD patients when either chemotherapy or radiation therapy was utilized. After adjusting for other factors, these differences were no longer significant. With few clinical trials being conducted on the immunocompromised population, future studies are needed to determine a standard of care within the AD population.

## 57

**Prostate Cancer Knowledge among Men Residing in Neighborhoods with a High Burden of Prostate Cancer**

Zeigler-Johnson CM, Keith SW, McIntire R, Glanz K, Leader A

Purpose: Prostate cancer (PCa) awareness and knowledge varies by individual and neighborhood-level characteristics. Increasing PCa knowledge may decrease disparities related to late-stage PCa diagnosis. The goal of this study was to examine PCa knowledge among men that live in neighborhoods with a high burden of PCa. Methods: We recruited 240 men residing in high burden neighborhoods (based on incidence, mortality and tumor aggressiveness) for PCa in Philadelphia. The study participants had no personal history of PCa. We administered a survey to evaluate sample demographics and knowledge and beliefs about PCa. Knowledge scores were computed at baseline and post education session by taking the sum of correct answer indicators (10 points per correct response) on a 10-item questionnaire designed for assessing PCa knowledge (i.e., a 100 point knowledge scale). We calculated knowledge if at least half of the questions were answered. Missing responses were considered incorrect responses. We used Kruskal-Wallis tests to examine differences in PCa knowledge by possible modifiers, including age group (<age 53 vs. age 53+), marital status, education status, previous prostate specific antigen (PSA) screening, and neighborhood of residence. A p-value <0.05 was considered significant. Results: The median age of the sample was 53 (range 27-83).Ninety-two percent of the sample was African American. The median knowledge score was 80 (range 30-100). There were no differences in PCa knowledge by age group (p=0.71), marital status (p=0.63), neighborhood of residence (0.710), or history of PSA test (0.95). However, PCa knowledge differed by educational attainment. Men with more than HS education had higher PCa knowledge than those with less education (score 90 vs. 80, p=0.03). Conclusions: In these preliminary findings, general PCa knowledge was high among men who live in neighborhoods with a high burden of PCa. Higher educational attainment may be associated with higher PCa knowledge scores. More research is needed to assess bias from confounding and understand modifiable factors that influence PCa disparities.

## 58

**The Impact of Educational Attainment on Breast and Cervical Cancer Screening Outcomes Among Rural and Border Texas Women Participating in a Patient Navigation Intervention**

Falk DS, Cubbin C, Jones BL

Purpose: To evaluate if educational attainment affects screening outcomes for lower educated, women of color living in rural and border counties in Texas. Methods: This study analyzes program evaluation data collected from patient navigation participants from March 1, 2012 to November 5, 2016. Logistic regressions tested main and interaction effects of age, race/ethnicity, and education attainment on breast and cervical cancer screening outcomes for patient navigation participants (N=5,122). Separate models included women aged 40+ (N=3,721) for mammogram screening outcomes and aged 21-64 (N=4,879) for Pap screening outcomes as indicated by ACS guidelines at the time of the intervention. Interaction terms of race/ethnicity/language categories and education examined the impact of educational attainment within each group. Results: There was no significant difference in screening outcomes for African American, English Speaking Latina, and Spanish Speaking Latina women based on education, but both high school and college educated non- Hispanic White women experienced more than 1.5 greater odds of screening for breast cancer compared to lower educated non-Hispanic White women. The Pap screening outcomes demonstrated significantly higher odds of screening for high school educated Spanish Speaking Latina women compared to Spanish Speaking Latina women with less than a high school education (OR=1.55, CI=1.02-2.35); however, none of the other interaction terms were significant indicating no differences among the other race/ethnicity/language categories. Conclusions: The results demonstrate that the intervention effectively mitigated lower educational attainment as a barrier to screening for women of color and add to scientific understanding of cancer screening behavior among women of varying education levels by racial/ethnic/language groups in rural and border Texas. The Commission on Cancer's standards include patient navigation as an essential component to patient-centered cancer care and should be embraced as a system that increases access to breast and cervical cancer screening services for un-/underserved populations.

## 59-T

### Do mobile units increase spatial accessibility to mammography for un-insured women in North Texas?

Hughes AE, Lee SC, Berry E, Eberth JM, Pruitt SL

Purpose. We investigated whether mobile units increased spatial access to mammography for uninsured women in urban, suburban, and rural North Texas. Methods. We used data from the Breast Screening and Patient Navigation (BSPAN) program, FDA mammography machine location data, and 2011-2016 American Community Survey data. BSPAN offers reduced-cost mammography screening at classic brick-and-mortar facilities and deploys a complementary mobile unit regionally. We measured access to mammography for uninsured women across 35 counties, using the variable two-step floating catchment area method. This method evaluates potential access by using to mammography services as a function of mammography location data and potential local demand, creating local supply-to-demand ratios. We measured supply by linking BPSAN providers to FDA data. To measure demand among uninsured women, we identified Census tract population centroids weighted by insurance status. We assumed: 1 machine could screen 14,815 in one year; women do not travel further than 60 minutes for mammography; and women are more likely to go to closer facilities. We estimated V2SFCA scores using stationary facilities only compared to stationarity and mobile facilities combined. Results. Availability of mobile units significantly increased accessibility (p=0.03). Mobile units deployed most often to urban core counties (Dallas and Tarrant; 49.3% of uses), but also visited 16 counties outside of the urban core. Visual inspection of mapped spatial access scores showed that mobile mammography increased access most in urban core counties and immediate suburban neighboring counties. Conclusions. Guideline-based screening can decrease morbidity and mortality for breast cancer by identifying cancers earlier, but women may delay or forego screening if they cannot easily access screening facilities. Rural North Texas counties need additional resources to facilitate mammography for underinsured women. Geospatial analyses can inform identification of optimal locations to facilitate access to mobile mammography screening for underinsured populations.

## 60

### Geographic variations in mortality from 5 common cancers in the United States from 1999-2016

Primm K, Callaghan T, Ferdinand A, Towne Jr S, Akinlotan M, Bolin J

Purpose: This study examines the scope of mortality associated with common cancer types in the U.S. from 1999- 2016, exploring differences by census region and levels of rurality. Methods: We used data from the National Center for Health Statistics at the Centers for Disease Control and Prevention (available via the CDC wonder platform) to investigate mortality trends for breast cancer, cervical cancer, lung cancer, prostate cancer, and colon cancer from 1999-2016. Age adjusted mortality rates for each cancer type were calculated per 100,000 residents within each level of the 2013 NCHS Urban-Rural Classification Scheme. Results: Common cancers such as breast, cervical, lung, prostate, and colon have been responsible for more than 976,000 deaths in America's rural areas from 1999-2016. Rural areas had higher age-adjusted crude mortality rates for lung, prostate, and colon cancer, compared to urban areas. Large central metropolitan areas (most urban) had higher rates of breast and cervical cancer, compared to rural areas. Mortality from lung cancer was higher in rural areas compared to urban across all regions but the Midwest. All analyzed cancer types except prostate cancer had consistently lower mortality rates in the West region of the U.S. Conclusion: Results from this study indicate that the influence of rurality on mortality outcomes varies across cancer type. While we observed higher mortality rates from lung cancer, prostate cancer, and colon cancer in rural areas relative to urban areas, the opposite is true for breast and cervical cancer mortality rates. For most of the cancer types included in this investigation, mortality rates were highest in the South and lowest in the West with especially high rates observed in the rural South. Findings indicate the need for additional funding and resources in the South to reduce mortality from lung, colon, and cervical cancers and in the rural West to reduce mortality from prostate cancer.

## 61-T

A New Survivorship and Disparity Concern in Patients with Metastatic Lung Cancer: Financial Hardship in the Setting of Immunotherapy

Steffen LE, Levine BJ, McDougall, JA, Lycan T, Ruiz J, Grant SC, Blackstock AW, Petty WJ, Weaver KE

Purpose: Financial hardship is related to poor quality of life and mortality and may increase with the advent of costly therapies like immunotherapy. The purpose of this study was to describe financial hardship and identify risk factors in patients undergoing immunotherapy for metastatic non-small cell lung cancer. Methods: From October 2017 to July 2018, we surveyed patients undergoing immunotherapy with or without chemotherapy for metastatic lung cancer at an academic medical center. We used a multidimensional framework to describe financial hardship in terms of material costs, coping with costs, and affective impact. Independent samples t-tests and contingency tables tested the association between hardship (AHRQ Medical Expenditure Panel Survey; FACIT-COST [lower scores indicate higher financial distress]) and sociodemographic and clinical factors. Results: The sample included 60 patients (Mean age = 62.5 yrs; 40% male; 75% Caucasian) who had been on immunotherapy an average of 29 weeks (SD = 31.32). Roughly half had a high school degree or less (45%) and a household income of $25K/year or less (47%); 17% were on Medicaid. Most (77%) had an informal caregiver and were married (65%). Regarding financial hardship, 78% reported material costs (e.g., paying out of pocket for medications), 40% coping (e.g., reducing spending on leisure, cutting back on the basics), and 63% affect (e.g., worry about the family's financial stability). Over half (52%) reported financial hardship in all three domains. Patients whose caregivers had made a change to employment (e.g., unpaid time off, work status) were more likely to report financial hardship in all three domains (55% vs. 28%, p = .03) and have more financial distress (Mean COST = 19.6 vs. 26.8, p = .01) compared to patients whose caregivers had not. Reducing spending on the basics was most strongly associated with financial distress (Mean COST = 12.7 for those who had reduced spending vs. 28.1 for those who had not, p <.001). Conclusions: Half of all patients undergoing immunotherapy for metastatic lung cancer may experience financial hardship in multiple domains. Asking patients if they have reduced spending on the basics or if their caregiver has had to make a change at work can help identify hardship.

## 62

Reaching a Change-point in Patterns of Race- and Ethnic-Specific Breast Cancer Mortality

Trentham-Dietz A, Chapman C, Bird JE, Gangnon RE

Purpose. Changing demographic patterns in the US and dissemination of new approaches for early detection and treatment affect current and projected disease burden. We estimated the proportion of all deaths that was due to breast cancer for specific racial and ethnicity groups by year, age and birth cohort. Methods. Based on overall and breast cancer mortality rates from publicly available datasets (CDC Wonder and the Human Mortality Database), an age-period-cohort model was used to estimate the proportion of deaths due to breast cancer with 95% confidence intervals (CI) for US women aged 0-119 with birth years 1900-2015 in 4 categories: African American, Asian American, Hispanic (all races), and white. Breast cancer mortality rates were calculated as all-cause mortality rates multiplied by the percent of deaths due to breast cancer. Results. All-cause and breast cancer mortality rates were highest for older ages and birth cohorts in all 4 racial and ethnicity groups. The percent of deaths due to breast cancer increased across birth cohorts from 1900 to 1940 then decreased. The percent of deaths due to breast cancer was highest for women in their 40s and 50s for all birth cohorts. Prior to 2000, the percent of deaths due to breast cancer was highest for white women. For example, for 50-year-olds in 1990, the percent of deaths due to breast cancer was 9.3% (CI 8.8-9.8) for African American, 10.0% (CI 3.0-28.7) for Asian American, 11.4% (CI 9.9-13.2) for Hispanic, and 12.9% (CI 8.9-12.1) for white women. After 2000, the percent of deaths due to breast cancer was lowest for white women. For 50-year-olds in 2010, the percent of deaths due to breast cancer was 8.8% (CI 8.1-8.9) for African American, 13.0% (CI 11.3-14.9) for Asian American, 9.7% (CI 8.9-10.5) for Hispanic, and 8.1% (CI 7.6-8.4) for white women. Conclusions. The majority of women of all 4 racial and ethnic groups die from causes other than breast cancer. Mortality patterns have recently changed so that long-standing patterns of relatively high mortality rates due to breast cancer "as a proportion of all deaths" among white women are now lower than for African American, Asian American, and Hispanic women.

## 63

### Impact of Tailored Interventions on Receipt of a Preference-Concordant Colorectal Cancer Screening Test

Christy SM, Stump TE, Monahan PO, Rawl SM, & Champion VL

Purpose: Individuals at average risk for colorectal cancer (CRC) have multiple screening test options. Preference for a specific test modality may impact screening uptake. The current study examined: 1) the demographic and health belief characteristics of individuals with a preference for stool blood test (SBT) versus those with a preference for colonoscopy (COL); and 2) among those completing a screening test following receipt of one of three tailored interventions, the percentage of participants who completed a preference-concordant test, the demographic and health belief characteristics of those who completed a preference-concordant test, and the intervention effect on preference-concordant test receipt. Methods: Women (n=603) aged 50-75, at average CRC risk, not currently adherent to CRC screening guidelines, and with internet access were randomized to receive one of three tailored CRC screening interventions (i.e., web-based, phone counseling, or web plus phone counseling). Data were collected at baseline (i.e., demographics, health beliefs, stage of change [SOC]), during intervention receipt (i.e., health beliefs, SOC, test preference), and at 6 month follow-up (i.e., screening status). Results: Nearly two-thirds (64%) of participants preferred SBT. Significant differences in test preference were observed by age, intervention group, SOC for SBT, SOC for COL, and various health beliefs (i.e., perceived CRC screening benefits, self-efficacy for COL, and perceived barriers to both COL and SBT). At 6 months post-intervention, 230 participants (38%) completed CRC screening. Among those who completed post-intervention CRC screening, 84% completed a test concordant with their preference. Intervention group (p<.0001), age (p=.03), education (p=.02), and perceived CRC screening benefits (p=.03) were significantly associated with completion of a preference-concordant test. Conclusions: More than 80% of participants completed a preference-concordant test, a percentage higher than those reported in prior studies. Compared to participants completing a preference-discordant test, those completing a preference-concordant test were older, had completed less education, had lower perceived benefits of CRC screening, and were in the phone counseling only group.

## 64

### Changes in Incident Colonoscopy Use Among Young Adults in the United States

Fedewa SA, Siegel RL, Jemal A

Abstract Purpose of the Study: The American Cancer Society (ACS) recently lowered the recommended age to begin colorectal cancer (CRC) screening for average-risk adults from 50 to 45 years because of escalating CRC incidence in generations born since the 1950s. Although debate remains about whether this rise is a result of increased detection because of more colonoscopy use, population-based screening trends in individuals younger than 50 are unknown. Herein, we examined temporal trends in recent colonoscopy use among a nationally representative sample of adults aged 40-54 years. Methods: Recent colonoscopy prevalence was computed among 53,175 respondents aged 40-54 years in National Health Interview Survey (NHIS) data from 2000 through 2015. Unadjusted and adjusted rates of past year colonoscopy, accounting for sociodemographic factors, insurance and CRC risk factors (smoking, alcohol, excess body weight, and family history of CRC), were estimated overall and by 5-year age group. Factors related to past-year colonoscopy were examined with adjusted rate ratios (aRR) and 95% confidence intervals (CI). Results: Among respondents aged 40-44 years, unadjusted past-year colonoscopy rates did not change during 2000 to 2015 and ranged from 2.3% to 3.5% (p-value=0.771). In contrast, past-year colonoscopy rates in ages 45-49 and 50-54 increased between 2000 and 2008 (from 2.5% to 5.7% in 45-49 years and 5.0% to 15.0% in 50-54 years, respectively) but remained stable during 2008 to 2015. Adjusted rates were similar. People with a family history of CRC (40-44 years: aRR=3.90 95%CI 2.63-5.78; 45-49 years aRR=3.17, 95%CI 2.18-4.62; 50- 54 years aRR=1.36, 95%CI 1.04-1.77) were three to four times as likely to have a past-year colonoscopy. Conclusions and Relevance: During 2000 to 2015, past-year colonoscopy use in the United States was low among people in their 40s and increases were confined to ages 45-54 from 2000 to 2008. These trends do not fully explain the steady rise in young onset colorectal cancer during the corresponding time period. Further studies are needed to identify reasons for the rising CRC rates in young adults.

*- T Denotes Trainee*

## 65-T

### Feasibility of Using Rapid Case Ascertainment to Evaluate Kaposi Sarcoma in Africa

Semeere AS, Freeman E, Byakwaga H, Busakhala N, Wenger M, Rotich E, Kisuya J, Sang E, Wools-Kaloustin K, Martin J

PURPOSE OF THE STUDY: Even with increasing availability of antiretroviral therapy (ART), HIV-related Kaposi's sarcoma (KS) remains amongst the commonest cancers in sub-Saharan Africa. In the ART era in Africa, the main questions are why does KS occur despite undetectable HIV viremia, at what clinical stage does KS get diagnosed, and what are the determinants of prognosis? Addressing these questions requires detailed characterization of patients at the time of diagnosis and prior to worsening of disease, death, or loss-to-follow-up - a characterization that is typically performed in resource-rich settings by rapid case ascertainment (RCA). We set forth to evaluate the feasibility of RCA for KS in Africa. METHODS: We used electronic medical record (EMR) query, histopathology lab (HL) review and clinician notifications to find all new adult HIV-related KS diagnoses in the 52-clinic AMPATH HIV primary care network in Kenya. Upon identification of a potential case, an RCA team confirmed incident diagnosis, and, if confirmed, interviewed the patient, performed a physical exam and collected biological specimens. RESULTS: Over 28 months, we identified 287 patients with suspected new KS. Clinician notification yielded 88% of the cases, EMR query 9%, and HL review 3%. Of the 287, 197 were eligible for RCA with the remainder ineligible because of negative pathology, non-incident diagnosis, or origination outside the network. Of the 197 patients who were eligible, RCA was performed in 148 (75%); 26% of these were done within 14 days after diagnosis, 53% by 30 days, and 67% by 90 days. Logistical challenges were the main cause of failing to perform RCA in the remainder. Among 148 patients for whom RCA was done, median age was 36 years, 39% were women, and 75% had taken ART for over 30 days. Clinically, 96% had T1 (i.e., advanced) clinical stage and 73% had undetectable HIV plasma RNA. CONCLUSIONS: In a primary care network in East Africa, we demonstrated that RCA for KS is feasible. Most patients were diagnosed with advanced KS and most were on ART with undetectable HIV plasma RNA. Overcoming logistical challenges should enable optimization of the RCA process. The feasibility of RCA for KS suggests that RCA is also feasible for the study of other cancers in Africa.

## 66-T

### Prevalence and Factors Associated with Colorectal Cancer Screening using FOBT/FIT at Home versus in a Physician's Office

Chido-Amajuoyi OG, Sharma A, Talluri R, Tami-Maury I, Shete S

Background: Guidelines of the American Cancer Society and US Preventive Services Task Force specify that colorectal cancer (CRC) screening using guaiac-based fecal occult blood test (FOBT)/fecal immunochemical test (FIT) should be done at home. We examined the prevalence and correlates of individuals who screen for CRC using FOBT/FIT, at home versus in a physician's office. Methods: Analysis of 11,443 respondents, age 50-75 years, from the Cancer Controls Supplement of the National Health Interview Survey was conducted. Weighted multivariable logistic regression was used to identify the determinants of CRC screening using FOBT/FIT at home versus in-office. Results: Overall, 22.8% of respondents had CRC screening using FOBT/FIT, and among this screening population, the prevalence of in-office screening was 25% (95% CI, 22.7-27.4). In the multivariable model, age, geographic region, health insurance coverage status, and CRC risk factors predicted FOBT/FIT uptake, regardless of setting. When comparing in-office versus at-home screening, we found that sociodemographic factors alone, not CRC risk factors, predicted FOBT/FIT uptake. Hispanics had greater odds of utilizing in-office FOBT/FIT (aOR 1.61; 95% CI, 1.05-2.47). Compared to those who were 50 to 59 years of age, respondents age 60-69 years (aOR: 0.64, 95% CI: 0.49, 0.84) and 70-75 years (aOR: 0.48, 95% CI: 0.34, 0.67) were less likely to utilize in-office FOBT/FIT. Conclusion: This study identified high prevalence of in-office FOBT/FIT use, as well as differences in the uptake of CRC screening using FOBT/FIT, at home versus in-office. Our study highlights poor adherence of physicians to national guidelines.

## 67-T

### Heterogeneity in the prognostic value of the neutrophil-to-lymphocyte ratio: a meta-analysis and independent cohort study.

Howard R, Kanetsky PA, Egan KM

Purpose of study We evaluate whether the prognostic potential of the neutrophil-to-lymphocyte ratio, an established marker of systemic inflammation associated with survival outcomes in cancer patients, differs between patient subgroups. Methods A meta-analysis of 228 published studies and a retrospective cohort of 5,363 patients treated at the Moffitt Cancer Center in Tampa, FL are coupled to investigate sources of heterogeneity in the association between pre-treatment NLR and survival. We define demographically and clinically homogeneous patient subgroups based on study-level and individual-level variables, and identify patients for whom the NLR has maximum prognostic potential. Results In the Moffitt cohort, NLR demonstrated stronger associations (HRs>2) with survival among African-American patients, patients receiving only radiation therapy, stage IV patients and patients with melanoma than in the overall study population (HR=1.58). Sensitivity and specificity of the NLR as a prognostic marker were also higher in these and other patient subgroups than for the population as a whole, and increased further still for patients with a combination of multiple "high-risk" demographic or clinical characteristics. While significant heterogeneity was observed between studies in the meta-analysis, increased effect sizes in melanoma patients and radiation-treated patients were also observed in the published literature. Conclusions The NLR has greater prognostic value in patients with certain demographic and clinical features. Association studies with arbitrary high-risk cutoffs in small, homogeneous populations may be of limited value. Future work should focus on further characterization of populations with maximum prognostic potential and identifying clinically meaningful thresholds for risk stratification.

## 68

### Provider Communication, Patient Preferences, and Overuse in Cervical Cancer Screening

Rendle KA, Schapira MM, Ogden S, Eriksen W, Bocage C, Glanz K

Purpose. To examine provider communication regarding different cervical cancer screening modalities and how it may shape overuse. Methods. Using electronic medical record data, we identified all women who received routine cervical cancer screening between April-June 2018 at the University of Pennsylvania Health System. Of the 467 women screened, 150 women were randomly selected to be invited to participate and 30 women enrolled. Eligibility for routine screening was confirmed during recruitment and all women identified as high-risk were excluded. A semi-structured interview guide was used to examine three domains: a) influential factors shaping screening modality decisions; b) potential strategies for decreasing overuse; and, c) perspectives on primary HPV testing. Participants also completed a structured questionnaire examining screening practices and beliefs. Interview data were analyzed using directed content analysis, and survey data were analyzed descriptively. Relationships between qualitative and quantitative data were analyzed using a concurrent mixed-methods approach. Results. The majority of women described little to no communication by their providers regarding different cervical cancer screening options. Most women (75.9%) stated that providers recommended Pap smears, but only 13.3% reported that they also recommended human papillomavirus (HPV) testing. Only 27.6% and 20.7% of women reported that providers discussed benefits or harms of screening, respectively. With regard to overuse, most women (76.7%) reported that they believed women should have Pap smears annually, and over half (53.3%) stated they would not feel comfortable discontinuing screening at age 65. However, 37.9% reported that they would be screened using primary HPV testing every 5 years if recommended by their provider. In the interviews, the majority of women discussed being open to different screening strategies (including primary HPV testing) if their provider communicated the differences between each modality and the evidence supporting their recommended approach. Conclusions. Strategies to increase adoption of evidence-based screening guidelines are needed including interventions designed to help providers clearly communicate the evidence supporting less frequent screening.

## 69

Breast cancer screening recall rate on digital breast tomosynthesis with synthesized two-dimensional mammography

Sprague BL, Herschorn SD, Shenouda SV, Zuckerman SP, Weaver DL, Conant EF

Purpose. Evidence to date suggests that digital breast tomosynthesis (DBT) reduces breast cancer screening recall rates when performed concurrently with conventional 2D digital mammography (DM). However, many breast imaging centers have now replaced DM with synthesized 2D mammography (SM); the radiation dose is substantially reduced by exchanging the DM images with SM images reconstructed from the DBT acquisition. The goal of this study is to evaluate screening recall rates for DBT screening with SM compared to DM/DBT imaging. Methods. We conducted an analysis of breast cancer screening recall rates on DBT exams before and after the adoption of SM at the University of Vermont Medical Center and the University of Pennsylvania. We identified 90,403 DM/DBT exams and 100,231 SM/DBT exams conducted between 2011 and 2018. Recall rate was defined as the proportion of exams recommended for additional imaging due to an abnormal finding. Logistic regression was used to estimate the association between modality and likelihood of a positive assessment after adjusting for known predictors of recall including age, race, body mass index, breast density, family history of breast cancer, baseline vs. subsequent screen, and radiology practice. Results. The raw recall rate on DM/DBT exams was 8.9% at the University of Pennsylvania and 7.2% at the University of Vermont Medical Center, with a combined recall rate of 7.9%. On SM/DBT exams, the raw recall rate was 7.0% at the University of Pennsylvania and 7.1% at the University of Vermont Medical Center, with a combined recall rate of 7.0%. In the multivariable model, SM/DBT screening was associated with a 12% reduction in recall rate (odds ratio [OR] = 0.88; 95% confidence interval [CI]: 0.85-0.91). There was a statistically significant interaction according to radiology practice (p<0.001), such that SM/DBT screening was associated with reduced recall at the University of Pennsylvania (OR=0.77; 95% CI: 0.73-0.81) but not at the University of Vermont Medical Center (OR=0.98; 95% CI: 0.94-1.03). Conclusions. Our results suggest that SM adoption may further reduce recall rate for breast cancer screening with DBT, but that the impact of SM adoption on screening recall varies across screening centers.

## 70

Examination of Genetic Alterations in Young Lung Cancer Patients

Bittoni MA, Shaw SS, Tchekneva EE, Hicks D, LeDuc D, Carbone DP, Dikov MM

Increased incidence of advanced lung cancer at younger ages has been reported, as well as associations with certain genetic mutations, such as ALK, EGFR and ROS1, but the results have been mixed due to multiple confounding factors, such as smoking status, sex, race, etc. The purpose of this report is to examine associations between genetic mutations and young lung cancer, as well as other demographic, clinical and socioeconomic factors. Methods: The Addario Lung Cancer Foundation patient registry provided patient-reported demographic and clinical information for 1,181 lung cancer cases. Data were analyzed using multiple logistic regression models to examine associations between genetic alterations (ALK, ROS1, EGFR, and PDL1) and young lung (age<50), as well as sex, race, education, insurance, marital status, histology, stage at diagnosis, smoking and family cancer history. Results: Of 1,181 cases, the majority (74%) were female, 39% were <age 50, 64% were college-educated and 75% were married/partnered, with over half (52%) reporting private insurance, and 51% ever having smoked. Adjusted logistic regression models revealed a 78% increased odds of ALK mutation for those <age 50 (OR=1.78; 95%CI=1.18, 2.68), a 2-fold increased odds of ALK for adenocarcinoma vs other histology (OR=1.89; 95% CI=1.11, 3.22) and almost 3-fold increased odds of ALK for late vs early stage (OR=2.88; 95%CI=1.40, 5.91) and smoking (OR=2.73; 95%CI=1.78, 4.18). The only significant factor associated with EGFR was smoking (OR=2.22; 95%CI=1.38, 4.37), and for ROS1 only insurance status approached significance (p=0.06). Late vs early stage was the only factor associated with PDL1 expression (OR=4.3; 95% CI= 1.3, 12.1). Conclusions: Age remained a significant predictor only for ALK in adjusted models. Insurance (a proxy for socioeconomic status) only approached significance for ROS1. Smoking was significant for EGFR and ALK only, which was surprising. PDL1 results by stage indicate increased PDL1 expression during tumor progression and aggravation of immunosuppression in the microenvironment. Overall these results shed new light on predictive factors of genetic alterations. Future research with larger, more diverse populations is needed to further refine and quantify the results.

### Surveillance mammography utilization among older breast cancer survivors: impact of comorbidity and functional status

Braithwaite D, Zhang D

Purpose The nature of the association of comorbidity and functional limitations - which are commonly observed among the elderly - with surveillance mammography utilization among older women diagnosed with breast cancer is not well understood. Methods We used Behavioral Risk Factor Surveillance System data from 2009, 2010, 2012, 2014, and 2016 to fit multivariable logistic regression models examining surveillance mammography by comorbidity and functional limitations among older breast cancer survivors aged 65 and older. Models were adjusted for age at interview, race, geographic region, education, marital status, clinical checkup, obesity, physical activity, smoking status, and survival time. A sensitivity analysis examining the association between poor health status and surveillance mammography was conducted by treating poor health status, which was defined as the simultaneous presence of major comorbidities and functional limitations, as the exposures of interest. Results Of 2,552 respondents, 88.2% (2,240) were white and the median age was 75 years (range 65-99 years). Those undergoing surveil-lance mammography were more likely to be younger, married, physically active, living in the Northeast, and without functional limitations or comorbidity (ps<0.05). Of 74.5% (1,902) women who underwent surveillance mammography during the past year, 39.2% (1,001) had at least one major comorbidity; 41.5% (1,060) had functional limitations and 21.8% (557) had poor health status. Conclusion Utilization of surveillance mammography was inversely associated with comorbidity, functional limitations, and poor health status. Hence, these factors may serve as potential barriers to surveillance mammography among older breast cancer survivors.

### Evaluation of provider tools for referral to cancer genetic counseling and testing for breast and ovarian cancer risk

Rodriguez JL, Peipins L, Kumerow MT

Purpose The goal of this study was to assess the referral patterns of family history screening tools for for breast and ovarian cancer risk. Methods We selected seven tools used to help providers screen patients for referral to genetic services for cancer risk using family history of cancer for evaluation. These included the Breast Cancer Genetics Referral Screening Tool, Pedigree Assessment Tool, Family History Assessment Tool, Breast Cancer Screening Questionnaire, Six-Point Scale, the Family History Screener, and the Michigan Wheel. For each tool, we compared the percentage of women who would be referred to genetic counseling against referral to genetic services using BRCAPRO scores and referral criteria from the National Comprehensive Cancer Network. Personal history of cancer and cancer in first- and second-degree family members were input into each of the selected tools to identify the percentage referred. Concordance between tools was measured using Cohen's Kappa. Analyses used self-reported data from the 2005 California Health Interview Survey (CHIS) and data from a CDC-funded study at the Henry Ford Health System. Results Percentage of patients indicated for referral varied widely between tools, ranging from less than 1% to as high as 24%. Percentage of patients referred was higher among the clinic sample than in the population-based sample. These disparate results were likely due due to 1) differences in level of detail in ascertaining family history of cancer, and 2) dif differences in tool characteristics. Results of the concordance analysis indicated slight to mod moderate agreement in referral patterns. Lower levers of concordance are likely due to var variation among tools on level of detail in personal and family history required and num number of cancer types included. In addition, some tools had a significantly lower thr threshold of personal and family history required for referral, or were less specific in ide identifying individuals at high risk, thus leading to greater referrals. Conclusions Results provide health systems, medical practices, and providers with information on the performance of screening tools for genetic counseling referral based on family history of cancer. Results also may inform decisions about infrastructure needs and capacity.

*- T Denotes Trainee*

## 73-T

### Outcomes of Long-term Interval Rescreening with Low-Dose CT for Lung Cancer in Different Risk Cohorts

Lam ACL, **Aggarwal R**, Tsao MS, Shepherd FA, McGregor M, Menezes R, Tateishi H, Xu W, McInnis M, O'Kane GM, Hueniken K, Schmidt H, Kavanagh J, Liu G

Purpose: To evaluate the incidence of lung cancer via low-dose CT (LDCT) in participants with previously negative scans and to identify high-risk subpopulations. Methods: Individuals with negative baseline screening results from the Princess Margaret International Early Lung Cancer Action Program prior to 2009 underwent LDCT rescreening from 2015 to 2018. Individuals were contacted in order of decreasing risk, as determined by the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial's PLCOM2012 6-year lung cancer risk-prediction model, and then categorized into three risk cohorts according to their baseline risks. The incidence of lung cancer in each risk cohort was determined and compared. Chi-square testing was used for categorical variables and one-way ANOVA on ranks was used for continuous variables. Results: Of the 1261 participants we attempted to recontact, 359 patients returned for a rescreening scan (mean of 7.6 years between scans). Participants were divided into low (<2%), moderate (≥2%-<3.5%), and high baseline risk (≥3.5%) cohorts. On average, those in the high-risk cohort compared to the moderate and low-risk cohorts were older (66 vs 62 and 59 years) and had a greater smoking history (54 vs 47 and 29 pack-years), respectively. The incidence of cancer in the high-risk cohort was significantly higher than in the moderate-risk cohort (11% vs 1.7%, p=0.002). Conclusion: If rescreening efforts were prioritized to patients with a ≥3.5% 6-year baseline risk, a significantly higher incidence of lung cancer may be detected. Future studies will focus on the clinical benefit of rescreening patients who fall in the high-risk cohort and the management of patients in the moderate and low-risk cohorts.

## 74-T

### Sociodemographic and health-related factors associated with cervical cancer screening among women at a high risk of HIV infection: a cross-sectional analysis of the 2016 Behavioral Risk Factor Surveillance System (BRFSS) data

**Zhang D**, Braithwaite D

BACKGROUND: Previous studies identified various factors associated with cervical cancer screening. However, many of them used samples from the general population and limited of them focused on women with high-risk health behaviors. OBJECTIVE: Here we investigated factors associated with cervical cancer screening among women at a high risk of HIV infection. METHODS: The 2016 Behavioral Risk Factor Surveillance System (BRFSS) was used for our analysis and we included 3,458 women with a history of high-risk behaviors associated with HIV infection last year. Sociodemographic and health-related variables were collected by a self-report approach. We first descriptively summarized numbers of observations and weighted percentages of 13 sociodemographic and health-related factors. Crude and multivariable logistic regressions were used to investigate associations between study characteristics and screening. A sensitivity analysis restricted to women without a history of hysterectomy was conducted. We further examined if there was an interaction between clinical checkup, health coverage, and HIV test and race in relation to screening. RESULTS: A total of 2,918 women had cervical cancer screening (weighted%=85.6). In the multivariable model, older age (OR=0.45, 95% CI=0.25-0.80) and being a current smoker (OR=0.56, 95% CI=0.38-0.82) appeared to be inversely associated with screening. Graduating from college (OR=1.80, 95% CI 1.12-2.88), having clinical checkup last year (OR=2.22, 95% CI 1.56-3.16), owning health coverage (OR=1.91, 95% CI 1.25-2.92), regular exercise (OR=1.52, 95% CI 1.02-2.25), and having HIV test last year (OR=2.60, 95% CI 1.66-4.07) were positively associated with screening. We did not observe significant interactions for clinical checkup, health coverage, and HIV test. CONCLUSIONS: We identified 7 factors that could be potential barriers or facilitators to screening. This can help health practitioners establish a more targeted and efficient intervention program to increase cervical cancer screening among women at a high risk of HIV infection.

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## Blended (face-to-face plus web-based learning) program on smoking cessation for cancer care providers in Latin America

Tami-Maury I, Brigante M, Ortiz J, Diaz V, Garcia E, Andia E, Rincon J, Ochoa E, Shete S, Castaneda C, Acosta J

Purpose: To develop and test the feasibility of a blended program that prepares Spanish- and Portuguese- speaking cancer care professionals (CCPs) to safely and effectively provide brief smoking cessation counseling to their cancer patients and survivors. Methods: A convenient sample of sixty CCPs from two major cancer centers in Colombia (n=30) and Peru (n=30) were invited to participate in a 4-module blended program (face-to-face plus web-based online learning) on smoking cessation (April to October 2018). Demographic data was collected and pre- and posttests evaluations were conducted. Data analysis comparing knowledge, attitudes, and practices on tobacco use and cessation before and after the blended program used $X2$ and t-tests when appropriate. Results: Twenty nine and 24 CCPs completed the training in Colombia and Peru, (retention rate: 96.6% and 80.0%, respectively). Overall, the pre-posttest evaluation of the eLearning intervention indicated that both cohorts improved their knowledge, attitude, and practices toward tobacco use and cessation. Posttraining, Colombian and Peruvian CCPs reported higher scores for having adequate training in tobacco cessation interventions (p<0.001). Statistical significant differences were reported by Colombian CCPs in all the 6 items of the practice domain. Peruvian CCPs reported statistical significant improvements in only 2 items of this domain: asking cancer patients if they smoke and treating/referring them for smoking cessation. Three main barriers for providing smoking cessation services reported by Colombian and Peruvian CCPs were: lack of training, lack of time, and lack of available resources or referrals. Conclusions: Our blended program in smoking cessation specifically tailored to CCPs was both effective and well received by learners. The implementation of this curriculum appears to have had sustained beneficial effects on oncology environment beyond the simple acquisition of nicotine addiction knowledge. Cancer centers in Latin America ought to embrace smoking cessation practices so as to provide more comprehensive services to cancer patients. Although preliminary, these results provide justification for continued development and evaluation of this blended program in other Latin American cancer centers.

## The Effect of Hormone Receptor Status on Breast Cancer Treatment in Dar es Salaam, Tanzania

Habila MA, Soliman AS, Jacobs ET

Introduction Breast cancer is the leading cancer in women globally. Women in developing nations experience high mortality rates due to late diagnoses and lack of access to care. Research suggests that African women are more likely to have estrogen receptor (ER) negative tumors. The aim of the present study was to determine the effect that knowledge of hormone receptor status would have on breast cancer treatment in Dar es Salaam, Tanzania. Methods This study was a retrospective analysis of cases that sought treatment at Ocean Road Cancer Institute from 2007-2009, 2014, 2015, and 2016-2017. Data were abstracted from medical records in 2016 and 2017, and data from previous studies conducted by Taylor Sullivan and Ashley Burson (2009) were used in the analysis. Results Among 1450 breast cancer cases, 63.6% of women were diagnosed in stage 4. A total of 93.5% of the patients received chemotherapy and 90.7% of the patients received surgery. ER negative breast cancer was found in 33% of women. In the time before the introduction of hormone receptor status testing, 19.3% of women received neoadjuvant chemotherapy compared to 12.1% in the time after (p<0.0001). Additionally, 48.1% of women received adjuvant chemotherapy in the time before introduction of hormone receptor status while 53.2% or women received similar treatment in the time after (p=0.036). The proportion of people who received hormone therapy differed significantly between the two groups as well; where 15% people received hormone therapy in the time before hormone receptor status was introduced compared to 12% in the time after (p<0.0001). Conclusion These finding suggest that there have been significant changes in treatment protocols for breast cancer patients in the time before and after the introduction of receptor status. However, further research is needed in order to determine how hormone receptor status can be used to optimize standardized treatment protocols for patients diagnosed with breast cancer.

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### Genital Powder Use and Risk of Ovarian Cancer: A pooled analysis

O'Brien KM, Tworoger SS, Harris HR, Weinberg CR, Trabert B, D'Aloisio AA, Sandler DP, Wentzensen N

Purpose: The relationship between genital powder use and risk of ovarian cancer is not well-understood. Positive associations reported in case-control studies generally have not been confirmed in prospective cohort studies, which though not subject to recall bias, may lack sufficient power to identify modest associations. Methods: To address this, we pooled data from four large prospective cohort studies: Nurses' Health Study, Nurses' Health Study II, Sister Study, and Women's Health Initiative Observational Study. Altogether, we had data from 250,641 women, including 2,073 who developed ovarian cancer. Results: Genital powder use was common (38% of non- cases ever used, versus 45% of cases) and varied somewhat by study sample (26%-53%). Using Cox proportional hazards models adjusting for potential confounders, we observed that ever powder use was associated with an 9% increase in the hazard of developing ovarian cancer, compared to never users (hazard ratio [HR] = 1.09, 95% confidence interval [CI] = 1.00, 1.20). The association was similar in frequent users (HR=1.10, 95% CI: 0.96, 1.25 for use >1/week versus none), but not among long-term users (HR=1.04, 95% CI: 0.84, 1.29 for >20 years of use versus none). The strongest association was observed among women with patent reproductive system, e.g. had a uterus and had not had tubal ligation, at the time powder exposure was assessed (HR=1.15, 95% CI: 1.03, 1.29). There were no clear differences by ovarian cancer subtype. Conclusions: This large, well-powered prospective study observed a weak association of genital powder with ovarian cancer risk, which appeared to be limited to women with patent reproductive tracts.

## 78-T

### Hormonal and Reproductive Risk Factors for First and Second Primary Ovarian Cancer in a Cohort Enriched for Increased Familial Risk, the Breast Cancer Family Registry

Ferris JS, Terry MB, Andrulis IL, Buys SS, Daly MB, John EM, Hopper JL, Genkinger JM

Purpose: Developing a second primary cancer is one of the most severe sequelae of a cancer diagnosis and limited research has been done to assess risk factors for second primary ovarian cancer following a breast cancer diagnosis (BR-OV). Being able to identify potentially modifiable risk factors for second primary cancers is critical for cancer survivors and women at increased risk of breast and ovarian cancer; therefore, we evaluated the association between hormonal and reproductive factors and risk of BR-OV and first primary ovarian cancer (OV). Methods: Using data from the Breast Cancer Family Registry (BCFR) Cohort, we conducted a cohort study to evaluate the association between oral contraceptive (OC) use, number of full-term (FT) pregnancies, and breastfeeding and risk of BR-OV and OV using Cox Proportional Hazards models. We evaluated effect measure modification by predicted lifetime familial risk of breast or ovarian cancer estimated from pedigree data by the program BOADICEA. Results: There was no association between OC use and risk of BR-OV (HR=1.07, 95% CI: 0.51, 2.25). For women without breast cancer, OC use was marginally associated with a lower risk of OV (HR=0.59, 95% CI: 0.34, 1.00); however, this association was stronger in women with a lifetime familial risk of breast or ovarian cancer of 20% or higher (high risk) (HR=0.33, 95% CI: 0.13, 0.86). Having two or more FT pregnancies was associated with a lower risk of BR-OV (HR=0.47, 95% CI: 0.22, 0.97) but was not associated with OV. There was no association between breastfeeding and either BR-OV or OV. Conclusion: OC use may have a different effect on ovarian cancer risk depending on whether a woman has a previous diagnosis of breast cancer, and on her underlying familial risk of breast or ovarian cancer.

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## 79-T

### Recreational physical activity and overall survival for women diagnosed with breast cancer in the Prospective Family Study Cohort (ProF-SC)

**Kehm RD**, Liao Y, Zeinomar N, Phillips KA, Daly MB, John EM, Andrulis IL, Buys SS, Hopper JL, Terry MB

Purpose: To examine the association of recreational physical activity (RPA) with overall survival (OS) after breast cancer (BC) diagnosis in a large prospective family cohort. Methods: We studied 4,709 women from the Prospective Family Study Cohort (ProF-SC) who were enrolled within 2 years of first primary BC diagnosis. Women were followed for up to 21 years (median=11.2 years); 1,176 deaths were ascertained by active follow-up, relative-report, or death records. At enrollment, women self-reported average hours per week of RPA during the 3 years prior to diagnosis. We categorized women into quintiles of total metabolic equivalents (METs) per week and tested the association with OS using multivariable Cox proportional hazards regression. Models were stratified by age group at diagnosis (10-year intervals), and a robust variance estimator accounted for family-level clustering. We examined whether the association was confounded or modified by age at diagnosis, education, lifestyle factors, body mass index (BMI), tumor characteristics, or absolute predicted 1-year BC risk estimated from pedigree models. Results: Overall, women in the highest RPA quintile (≥35 METs/week) had a 15% reduced risk of death compared to women in the lowest RPA quintile (0-4 METs/week) after first primary BC diagnosis (Hazard Ratio (HR)=0.85, 95% CI=0.70-1.03); no significant linear trend was found across quintiles of RPA (p=0.21). Consistent patterns were found across strata of education, smoking status, age at diagnosis, estrogen receptor status, and tumor stage. Across strata of BMI, an association was only found for women â‰¤ 25 kg/m2 (interaction p=0.03). The RPA-OS association was positively associated with absolute predicted 1-year BC risk (interaction p=0.03). Compared to the 15% reduced risk of death associated with high versus low RPA in the overall sample, high RPA was associated with a 2% (HR=0.98, 95% CI=0.79-1.22), 8% (HR=0.92, 95% CI=0.75-1.12) and 24% (HR=0.76, 95% CI=0.62-0.94) reduced risk of death for women at the 10th, 50th, and 90th percentile of absolute predicted BC risk, respectively. Conclusion: RPA may improve OS for women diagnosed with BC, particularly for women who are at higher risk for developing BC based on a family history of disease.

## 80-T

### Potential tumor suppressive role for IGFBP7 in pancreatic cancer

**Orenduff MC**, Kok DEG, Hursting SD

Purpose: Determine and characterize the role of insulin-like growth factor binding protein 7 (IGFBP7) in the tumor suppressive effects of caloric restriction (CR). This includes use of bioinformatics to target CR-induced changes on IGFBP7 in normal (tumor-free) versus oncogenic (pancreatic cancer) murine models. Methods: Using 60 LSL-Kras(G12D)/Pdx-1-Cre/Ink4a/Arf(lox/+) mice, a human-relevant mouse model of spontaneous pancreatic ductal adenocarcinoma (PDAC), we tested the effects of diet-induced obesity (DIO) and CR, relative to control diet-fed mice. All mice were monitored for PDAC development and killed at 26 weeks of age. Serum was analyzed for IGF-1 and IGFBP7. Pancreata collected from a separate group of wild-type C57BL/6 mice fed DIO, CR, or Control diets for 12 months were analyzed by Affymetrix microarrays, with emphasis on IGF-related gene expression signatures. We also treated human PDAC cell lines MIA PaCa-2, BxPC-3, and PANC-1 with exogenous IGFBP7 following IGF-1 stimulation. Modulation of IGF-1 signaling was measured by immunoblot analysis for phosphorylated IGF-1R, Akt, and ERK 1/2. Proliferation in response to IGFBP7 was also assessed using MTT-viability assay. Results: CR mice, relative to control, had increased pancreatic tumor-free survival, while DIO mice had shortened survival. Serum biomarker analyses and gene expression microarray analyses indicate several components of the IGF signaling pathway were found to be altered by diet. Specifically, the expression of IGFBP7 was increased in response to CR and decreased in response to DIO. All cell lines treated with IGFBP7 had reduced phosphorylation in growth signaling pathways and decreased viability compared to untreated cells. Conclusion: CR strongly inhibits pancreatic tumor development and progression compared to DIO in Kras Ink4a+/- mice. In wild-type C57BL/6 mice, there was a diet-dependent effect on IGF signaling proteins in serum and pancreatic tissue; in particular, IGFBP7 was modulated by dietary energy balance and appears to have anticancer effects on pancreatic cancer cells. These results suggest IGFBP7 may be a potential intervention target for preventing and treating pancreatic cancer.

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### Dietary inflammatory potential, oxidative balance score, and risk of breast cancer

**Park YM**, Shivappa N, Petimar J, Hodgson ME, Steck SE, Halbert JR, Sandler DP

Purpose: Diet, inflammation and oxidative stress may play important roles in breast carcinogenesis, but evidence on the association between inflammatory and pro-oxidative potential of diet and breast cancer (BC) risk is limited. Methods: Energy adjusted-Dietary Inflammatory Index (E-DII)TM and oxidative balance scores (OBS) were calculated for 44,491 Sister Study cohort participants who completed a validated food frequency questionnaire at enrollment in 2003-2009; all were included in analyses. Women aged 35 to 74 years in the U.S. and Puerto Rico were eligible if they had a sister who had been diagnosed with BC. High E-DII and low OBS scores represent a more pro-inflammatory and pro-oxidative diet, respectively. Cox proportional hazards models were used to estimate multivariable-adjusted hazard ratios (HR) and 95% confidence intervals (CIs) for BC risk by E-DII and OBS quartiles, after adjusting for potential confounders including known risk factors for BC. Results: We identified 1,846 invasive BCs that occurred at least 1 year after enrollment (mean follow-up 8.5 years). Lower OBS was associated with increased BC risk (HRlowest vs. highest quartile: 1.29 [95%CI, 1.11-1.51], Ptrend=0.003), whereas the positive association with E-DII only approached statistical significance (HRhighest vs. lowest quartile: 1.12 [95%CI, 0.98-1.29], Ptrend=0.1). However, both indices consistently showed strong associations with triple-negative BC (HR: 1.84 [95%CI, 1.07-3.17], Ptrend=0.03 for OBS and 1.88 [95%CI, 1.13-3.13], Ptrend=0.01 for the E-DII). When the two indices were combined, a pro-inflammatory/pro-oxidant diet (highest quartile of E-DII and lowest quartile of OBS) was associated with increased BC risk (HR: 1.30 [95%CI, 1.07-1.56], Ptrend=0.007 for all invasive BC; 2.08 [95%CI, 1.05-4.11], Ptrend=0.01 for triple-negative BC), compared with an anti-inflammatory/anti-oxidant diet (lowest quartile of E-DII and highest quartile of OBS). These associations were stronger for postmenopausal BC. Conclusions: Poorer diet quality, as measured by oxidative stress and inflammatory potential, was positively associated with breast cancer, and in particular triple-negative breast cancer. Findings need to be replicated using biomarkers of oxidative stress and inflammation.

## 82-T

### Risk versus benefit of chemoprevention among raloxifene and tamoxifen users with a family history of breast cancer

**Anderson C**, Nichols HB, House M, Sandler DP

Purpose: Tamoxifen and raloxifene have been approved for the primary prevention of breast cancer in high-risk women, but are associated with an increased risk of serious side effects. Few studies have characterized risk- benefit profiles for chemoprevention among women who initiate tamoxifen or raloxifene outside of the clinical trial setting. The objectives of this study were to describe risk-benefit profiles of women with a family history of breast cancer who reported use of tamoxifen or raloxifene for primary breast cancer prevention, and to evaluate characteristics associated with tamoxifen and raloxifene use. Methods: Use of raloxifene and tamoxifen for chemoprevention was self-reported in 2014-2016 by participants in The Sister Study, a prospective cohort of women with a sister who had been diagnosed with breast cancer. After exclusions, 432 current raloxifene users and 96 current tamoxifen users were matched to 4307 and 953 non- users, respectively, on age and year of cohort enrollment. Conditional logistic regression was used to evaluate characteristics associated with chemoprevention use. Risk-benefit profiles were examined using published indices that assess the level of evidence (none, moderate, strong) that the benefits of chemoprevention outweigh the risk of serious side effects. Results: Among current chemoprevention users, 44% of tamoxifen users and 5% of raloxifene users had no evidence of a net benefit. In analyses of factors associated with chemoprevention use, having strong evidence of benefit was a significant predictor of raloxifene use, but not of tamoxifen use. Conclusion: In our sample of women with a first-degree family history of breast cancer, raloxifene was more commonly used for breast cancer prevention than tamoxifen. Most raloxifene users, but <60% of tamoxifen users, were likely to benefit. Use of risk-benefit tables can help women and their healthcare providers make an informed decision about breast cancer chemoprevention.

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### The Feasibility of High-Intensity Interval Training Among Women at Heightened Risk for Invasive Breast Cancer

Coletta AM, Brewster AM, Minxing C, Li Y, Bevers TB, Basen-Engquist K, Gilchrist SC

Purpose: This trial assessed the feasibility of High-Intensity Interval Training (HIIT) among women at heightened risk for breast cancer and explored the impact of HIIT compared to the traditionally prescribed moderate-intensity continuous training (MICT) and usual care (UC) on changes in cardiorespiratory fitness (CRF), body weight and body mass index (BMI), important factors linked with breast cancer risk. Methods: Forty-four women at heightened risk for invasive breast cancer (i.e. postmenopausal women with overweight/obesity and a history of proliferative breast lesions and/or elevated Gail 5 year or lifetime risk score) were randomized to HIIT, MICT or UC for a 12-week intervention. Participants in HIIT and MICT completed three weekly supervised exercise sessions on a treadmill. HIIT included a 5-minute warm-up at 50-70% peak heart rate (HR), then four cycles of four minutes at 90-100% peak HR followed by three minutes at 50-70% peak HR. MICT consisted of 41 minutes at 50-70% peak HR. Feasibility was assessed by summary statistics. At baseline and 12-weeks, CRF was assessed with cardiopulmonary exercise test, and body weight and BMI were measured. Two-sample t-tests assessed between-group differences in change scores of outcome variables at 12-weeks from baseline (2.5% significance level). Results: Average age and BMI was 63.9±8.8 years and 30.9±5.7 kg/m2, respectively. Participants completed 90% and 89% of workouts in HIIT and MICT respectively, with 100% compliance to the exercise prescriptions. The numbers of adverse events were not statistically different between HIIT and MICT (p=0.49) and no serious adverse events were reported. Compared to MICT and UC, HIIT exhibited greater increase in change in time to fatigue (HIIT: 127.6±75.3 vs. MICT: 29.1±53.4 seconds, p=0.003, vs. UC: 9.91±55.8 seconds, p<0.001). Compared to UC, HIIT exhibited greater increase in changes in absolute and relative VO2peak (HIIT: 0.16±0.1, UC: 0.01±0.1 L/min, p=0.02; HIIT: 2.34±1.8, UC: 0.21±2.2 ml/kg/min, p=0.02). There were no significant differences between groups in change in body weight or BMI (p>0.05). Conclusions: HIIT is feasible, safe, and appears to promote greater improvements in CRF compared to MICT and UC in this patient population.

## 84-T

### Exercise is associated with skeletal muscle preservation during preoperative treatment of pancreatic cancer

Gorzelitz J, Parker NH, Ngo-Huang A, Petzel MQB, Prakash L, Garg N, Schadler K, Fogelman D, Tzeng CW, Kim MP, Lee JE, Varadhachary G, Basen-Engquist K, Katz MHG

Purpose: Skeletal muscle (SKM) loss is common among patients with pancreatic cancer, may be exacerbated by treatment, and is associated with a poor prognosis. We hypothesized that exercise may mitigate SKM loss in patients undergoing preoperative pancreatic cancer treatment, and therefore compared SKM change between patients enrolled in a prescribed, home-based exercise program (EP) with patients advised to exercise per usual care (UC). Methods: EP participants were prescribed moderate-intensity aerobic exercise (≥60 min/wk) and strengthening (≥60 min/wk using resistance tubes) at enrollment (T0), through preoperative treatment to pancreatectomy (T1). UC patients underwent preoperative treatment without the prescribed EP. SKM cross-sectional area at the L3 vertebra was quantified using abdominal CT scans from T0, T1, and following surgery (T2), and standardized to patient height (m2). Rates of SKM change (cm2/m2/wk) were calculated from T0 to T1 and T0 to T2. Linear regression models adjusted for sex, age, baseline SKM, change in body mass index (BMI), and type of preoperative treatment received were used to evaluate differences in rates of SKM change based on EP participation. Results: Clinical and demographic profiles of EP (n=33) and UC (n=66) patients were similar (42% vs. 47% female, mean age 67.7±6.8 vs. 64.7±9.2, mean T1 BMI 27.1±5.4 vs. 27.3±4.7; 64% vs. 63% baseline sarcopenia; all p>.05). EP participants reported 118.7±65.3 min/wk aerobic and 46.1±35.7 min/wk strengthening exercise over 18.1±10.8 weeks of participation. Rate of SKM change from T0 to T1 was favorable among EP compared to UC patients (mean .01±.2 cm2/m2/wk vs. -.09±.2 cm2/m2/wk; p=.03). There was no significant difference from T0 to T2 (-.09±.2 cm2/m2/wk vs. -.12±.2 cm2/m2/wk; p=.4). Adjusted models showed a favorable and statistically significant association between EP participation and rate of SKM change from T0 to T1 (B=.10, p=.02) but not from T0 to T2 (B=.05, p=.1). Conclusions: Exercise may mitigate muscle loss during preoperative pancreatic cancer treatment. Exercise should be prescribed during treatment to maintain muscle mass and possibly improve oncologic treatment outcomes.

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## 85

### Domestic abuse screening among breast and cervical cancer oncology clinics at safety-net hospital

Jetelina KK, Obinwa UC, Murphy C, Tiro JA

Purpose of Study: Domestic abuse can directly and indirectly impact breast and cervical cancer incidence and survivorship. New evidence suggests domestic abuse screening in oncology clinics, coupled with appropriate referrals, can improve patient outcomes. The purpose of this study is to evaluate the extent of domestic abuse screening in oncology clinics at an integrated, safety-net health system. Methods: We extracted electronical health record (EHR) data on a population of patients diagnosed with breast or cervical cancer and receiving care in an integrated safety-net healthcare system from 2010-2017. All encounters were dichotomized as either an oncology encounter or other encounter (e.g. Emergency Department, inpatient, primary care). Domestic abuse is systematically screened using a single-item measure administered verbally by a nurse or medical assistant. Among the same cohort of cancer survivors, we conducted phone surveys and administered a 9-item, validated domestic abuse screener. Results: Among 2,524 breast or cervical cancer survivors, domestic abuse screening was documented in 37.3% of oncology encounters and, of those encounters, 0.4% of cancer survivors screened positive for domestic abuse. No cancer survivors screened positive more than once in oncology. Among all other health system encounters (i.e. excluding oncology), domestic abuse was identified in 1.6% of cancer survivors. Among phone surveys, 48% of cancer survivors screened positive for domestic abuse and, of those, 56% were interested in connecting to professional help within the health system. Conclusions: The EHR can be a useful tool for documenting domestic abuse, especially in oncology clinics. However, current efforts fail to identify a substantial number of patients. Clinical education of oncology teams could improve motivation to screen, understanding of domestic violence, and its impact on cancer treatment and survivorship.

## 86-T

### Prebiotic Supplement Use and Colorectal Cancer Risk in the Women's Health Initiative

Skiba MB, Kohler LN, Crane TE, Jacobs E, Kato I, Shadyab AH, Snetselaar L, Qi L, Thomson CA

Purpose: Prebiotics are a nondigestible food ingredient that are selectively fermented by intestinal microorganisms and are marketed for promoting the growth of beneficial microorganisms and maintaining bowel health. Prebiotic supplements available over-the-counter may be composed of either soluble or insoluble fiber. While the association between dietary fiber intake and colorectal cancer (CRC) has been studied, the association between prebiotic use and CRC remains unclear. Methods: The association between prebiotic use and CRC risk was studied using data from the Women's Health Initiative. Self-reported prebiotic use was captured on the current medications or current supplements form completed by participants at enrollment. Cox proportional hazards models were used to estimate the hazard ratio, adjusted for demographic and CRC risk factors, for the relationship between prebiotic use and CRC risk and investigate potential interactions with other CRC risk factors. Results: A total of 3,217 CRC cases occurred during an average 15.4 years of follow-up. Prebiotic supplement users (n= 5,990, 3.7%) were predominately non-Hispanic whites, non-smokers, with a normal body mass index. The majority (87.9%) of prebiotic supplement users did not meet dietary fiber recommendations ($\geq$25g/day) (mean dietary intake= 16.7 $\pm$ 7.0 grams). Overall, use of any prebiotic supplement was not associated with CRC risk (HR: 1.07; 95%CI: 0.88-1.31). The type of prebiotic supplement (soluble or insoluble) was also not associated with CRC risk (HR: 1.04; 95%CI: 0.83-1.29, HR: 1.39; 95%CI: 0.82-2.35, respectively). Likelihood ratio tests indicated no significant interactions between prebiotic use and other CRC risk factors. A difference in the direction of association between prebiotic use and CRC risk stratified on current calcium supplement use was observed, but was non-significant (calcium users = HR: 0.87; 95%CI: 0.57-1.35, calcium non-users = HR: 1.15; 95%CI: 0.91- 1.45). Conclusion: These results suggest that prebiotic fiber supplements are not associated with CRC risk in post- menopausal women. These data would not support the promotion of prebiotic fiber supplements to reduce CRC risk in post-menopausal women.

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### Associations of anti-inflammatory medication use with mammographic breast density

Yaghjyan L, Wijayabahu A, Eliassen H, Colditz G, Rosner B, Tamimi R

Purpose: We investigated the associations of aspirin, other non-steroid anti-inflammatory drugs (NSAIDs), and acetaminophen intake with mammographic breast density, a well-established and strong breast cancer risk factor. Methods: This study included 4,194 cancer-free women within the Nurses' Health Study (NHS) and Nurses' Health Study II (NHSII) cohorts. Percent breast density, absolute dense area (DA), and non-dense area (NDA) were measured from digitized film mammograms using a computer-assisted thresholding technique; all measures were square root-transformed for the analysis. Information on medication use was first collected in 1980 (NHS) and 1989 (NHSII) and was updated biennially. Medication use was defined as none, past or current; average cumulative dose and frequency were calculated for all past or current users using data collected from all bi-annual questionnaires preceding the mammogram date. We used generalized linear regression to quantify associations overall and by menopausal status. The regression estimates were adjusted for known breast cancer risk factors.
Results: In the overall analysis, none of the medications were associated with percent density. Frequency of aspirin use and duration of current aspirin use were positively associated with DA ($\beta$=0.26 for 6+ days/week vs. no use, p trend=0.04 and $\beta$=0.26 for duration >5 years vs. no use, p-trend=0.01, respectively). Regular NSAIDs use was positively associated with both DA and NDA (current use with duration ≥5 years vs. no use: $\beta$=0.40, p-trend 0.40 and $\beta$=0.62, p-trend=0.01, respectively). In a stratified analysis by menopausal status, the duration of current aspirin use and regular NSAIDs use were both positively associated with DA in postmenopausal women ($\beta$=0.32 for current use with duration ≥5 years, p trend=0.01 and $\beta$=0.69 p trend<0.01, respectively). Frequency of aspirin and regular NSAIDs use were positively associated with NDA among postmenopausal women ($\beta$=0.26 for 6+ days/week vs. no use, p trend=0.04 and $\beta$=0.87 for current use with duration ≥5 years, p-trend=0.01, respectively). No associations were observed in premenopausal women.
Conclusions: Aspirin and NSAIDs use are positively associated with DA and NDA in postmenopausal women; no associations are found in premenopausal women.

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### Applying a Short Physical Performance Battery to Screen Older Survivors for Exercise Trials

Bluethmann SM, Flores E, Potiaumpai M

Purpose: To apply a validated short physical performance battery (SPPB) to verify readiness of older cancer survivors (ages 65+) to participate in exercise trials by comparing differences in: 1) overall scores for survivors v. non-cancer controls and 2) functional capacity by cancer site that could inform screening and enhance trial participation. Methods: We used 2011 National Health and Aging Trends Survey (NHATS) data with community-dwelling Medicare beneficiaries (n=5,676), incl. adults with cancer (n=1125, except non-melanoma cases). The SPPB assesses multiple functions, including standing balance and gait speed, scored from 0 to 4 (0= worst;4=best), based on quartile cut-points from normative data. We calculated mean overall+subscores for all survivors and non-cancer controls and analyzed using logistic regression models, controlling for age, gender, education, race/ethnicity, multimorbidity and BMI. Results: Overall SPPB mean scores for survivors were 1.56 (CI 1.5-1.6), compared to 1.65 (CI 1.6-1.7) for non-cancer controls. Among survivors of breast (n=299), colorectal (n=103), gynecologic (n=108), prostate (n=318), bladder (n=44), kidney (n=35) and other cancers (n=218), prostate cancer survivors (PCS) had the highest overall performance score (1.86, CI 1.8-2). The lowest overall score was for gynecologic cancer cases (1.42, CI 1.2-1.6). Also, PCS had the highest subscores for balance and gait speed with mean scores of 2.57 and 2.48 respectively. Regression models revealed that older age (OR=0.9, CI 0.882-0.905, p<0.05), being female (OR=0.8, CI 0.7-0.97, p<0.05), having BMI<18.5 (OR=0.7, 0.4-1.1, p<0.05), black race (OR=0.5, CI 0.4-0.6, p<0.05), and greater co-morbidity (OR=0.1, CI 0.05-0.2, p <0.05) were less likely to perform well on SPPB measures. Conclusions: Survivors had worse function than non-cancer controls, which varied by cancer site and functional domain.PCS demonstrated the best scores overall + for balance and walking speed. Women, especially, gynecologic survivors had the worst. Black race, multimorbidity and low weight were negatively associated with poor function. SPPB provides a robust tool to assess readiness of older survivors for exercise trials, and can be used to tailor exercise programs to meet needs of older survivors.

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### Integrated Symptom Management and Lifestyle Behavior Intervention for Latina Cancer Survivors and Caregivers

Crane TE, Sikorskii A, Segrin C, Thomson CA, Slack SD, Penalosa I, Wright S, Alvarez A, Hoffacre B, Badger TA

Purpose. Symptoms lingering after completion of active treatment may be barriers to the adoption of healthy lifestyle behaviors associated with preventing cancer recurrence. Here we report the results from a pilot randomized trial of an intervention designed to improve adherence to the American Cancer Society Guidelines (ACS) on Nutrition and Physical Activity through integrated symptom management in Latinas with solid tumor cancers and their Informal caregivers. Method. Survivor-caregiver dyads were randomized 2:1 to either intervention or attention control. Twelve weekly intervention sessions included telephone based lifestyle coaching in either English or Spanish, with suggestions to use Symptom Management and Survivorship Handbook. Adherence to ACS guidelines was measured using the National Cancer Institute Diet Screener Questionnaire and the Women's Health Initiative Physical Activity Questionnaire. Distress from 15 symptoms was assessed using the General Symptom Distress Scale. General linear models were used to compare symptoms and adherence to ACS guidelines post-intervention while adjusting for baseline values. Adjusted effect sizes were estimated as Cohen's differences between the adjusted means of trial arms divided by the square root of the mean squared error. Qualitative analysis of exit interviews was used to evaluate satisfaction with the intervention. Results. A total of 39 dyads consented and were randomized to intervention (N=24) or attention control (N=15). Mean (SD) survivor age was 62±10 y and caregiver age was 54±18 y. At baseline, less than 20% of survivors and 55% of caregivers met the ACS guidelines. Post-intervention, symptoms were reduced in the intervention arm compared to attention control by ½ of the standard deviation (effect size d=0.5). Over 40% of survivors and caregivers in the intervention arm met the ACS guidelines on physical activity, and 60% met the ACS guidelines on nutrition. Satisfaction with intervention was high. Conclusions. Culturally relevant interventions such as the one pilot-tested in this study are needed and can improve adherence to healthy lifestyle behaviors while managing symptoms in the post-treatment period for both cancer survivors and their caregivers.

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### Risk of keratinocyte carcinomas in a randomized clinical trial of vitamin D and calcium for the prevention of colorectal adenomas

Passarelli MN, Karagas MR, Mott LA, Rees JR, Barry EL, Baron JA

Purpose: Observational studies linking blood levels of 25-hydroxyvitamin D to keratinocyte carcinoma (KC) risk have been inconsistent, and often suffer from confounding because ultraviolet radiation is both the primary risk factor for KC and involved in the production of vitamin D in skin. A large clinical trial of daily supplementation with 400 IU vitamin D3 and 1,000 mg calcium for the prevention of hip fracture in postmenopausal women found no treatment effect in a secondary analysis of KC without considering subtype. Methods: We evaluated the incidence of KC (basal cell carcinoma, BCC, and cutaneous squamous cell carcinoma, SCC) in the Vitamin D/Calcium Polyp Prevention Study, a multicenter, randomized, double-blind, placebo-controlled, partial 2x2 factorial clinical trial of vitamin D, calcium, or both for the prevention of colorectal adenomas. Between 2004- 2008, a total of 2,259 men and women, 45-75 years of age, recently diagnosed with a colorectal adenoma, were randomized to 1,000 IU of vitamin D3 daily and/or 1,200 mg of calcium carbonate daily. Women could elect to receive calcium and be randomized only to vitamin D. Treatment continued until a 3- or 5-year surveillance colonoscopy. Self- reported KC diagnoses were ascertained every 6 months during treatment and annually afterwards. Pathology reports were obtained for 94% of self-reported KC diagnoses, and a centralized, blinded review verified lesion histology and diagnosis date. Treatment effects were estimated using proportional hazards regression. Results: During a median follow-up of 8.3 years, 200 (8.9%) participants developed BCC and 68 (3.0%) participants developed SCC. BCC occurrence was unrelated to treatment (hazard ratio, HR [95% confidence interval], for vitamin D versus no vitamin D = 0.96 [0.73-1.26]; HR for calcium versus no calcium = 1.01 [0.74-1.39]; and HR for both versus neither = 0.99 [0.65-1.51]). There was suggestive evidence of treatment effects for SCC (HR for vitamin D versus no vitamin D = 0.79 [0.49-1.27]; HR for calcium versus no calcium = 0.60 [0.36-1.00]; and HR for both versus neither = 0.42 [0.19-0.92]). Conclusions: This secondary analysis of a randomized clinical trial suggests vitamin D and calcium supplementation reduces the incidence of SCC, but not BCC.

# Poster Session Abstracts

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### Cardiometabolic Health of Ovarian Cancer Survivors Enrolled in GOG/NRG 0225 Randomized Controlled Trial of Diet and Physical Activity

Thomson CA, Crane TE, Kohler L, Skiba M, Basen-Engquist K, Garcia DO, Lopez-Pentecost M, Miller A, Lankes H, Walker J, Alberts DS

Purpose: The Lifestyle Intervention for oVarian cancer Enhanced Survival (LIVES) study GOG/NRG 0225 is testing the hypothesis that ovarian cancer survivors randomized to a diet and physical activity intervention for a period of 24-months will have longer progression-free survival than survivors randomized to a health education control condition. The purpose of this analysis was to determine the frequency of abnormal metabolic biomarkers in this sample of women who completed cancer treatment within 6 weeks to 6.5 months of study enrollment and were disease-free. Methods: Biomarkers analyzed included cholesterol, high-density lipoprotein (HDL), low-density lipoprotein (LDL), triglycerides, insulin, glucose and high sensitivity C-reactive protein (hsCRP) using enzymatic colormetric method for lipids, enzymatic reference method with hexokinase for glucose and insulin and immunoassay for hsCRP. Descriptive statistics reporting averages and frequencies were performed. Results: At enrollment, the mean age was 59.3 y, 94.5% were Non-Hispanic White, and average body mass index was 27.9, with 29% classified as obese. Biomarker analysis at baseline on a sub-sample of 390 women, showed mean cardiometabolic indices of: cholesterol $96 \pm 24$ mg/dL, HDL $56 \pm 16$ mg/dL, LDL $122 \pm 39$ mg/dL, Triglycerides $136 \pm 78$ mg/dL, insulin $16.2 \pm 23.2$ mIU/L, glucose $96 \pm 24$ mg/dL, and hsCRP of $4.07 \pm 6.7$ mg/dL. Overall 60.5 % of ovarian cancer survivors enrolled in LIVES demonstrate hyperlipidemia, including 202 (51.8%) with elevated total cholesterol and 119 (30.5%) with elevated triglycerides. There is indication that 26.9% of the sample have elevated glucose concentrations consistent with pre-diabetes. Additionally, the prevalence of inflammation, as assessed using hsCRP as a non-specific marker, is high with 68.0% of the ovarian cancer survivors enrolled having a level above 3.0 mg/dL. Conclusions: Future assessments will include repeat measures of these cardiometabolic biomarkers over time (6,12 and 24 months post study enrollment) as well as change in these biomarkers in relation to intervention group assignment and adherence to the lifestyle intervention. When completed the LIVES study will be the largest lifestyle intervention ever completed among survivors of ovarian cancer.

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### Sleep duration and risk of invasive breast cancer among Black women

Bethea TN, Coogan PF, Barber LE, Palmer JR, Rosenberg L

Study purpose. It has been suggested that the relation of sleep duration with breast cancer risk is J-shaped, with higher risk for short and long durations of sleep. However, prospective studies have yielded mixed results. Black Americans tend to have shorter sleep durations than White Americans, but few studies have examined sleep duration and breast cancer within this population. A recent analysis among Black women (n=366 breast cancer cases) observed an increased risk of estrogen receptor negative (ER-) breast cancer for short weekday sleep duration. We assessed sleep duration and breast cancer risk in the Black Women's Health Study (BWHS), a large cohort study of Black women. Methods. In 1995, 59,000 women enrolled in the BWHS through mailed questionnaires and are followed through biennial questionnaires. Breast cancer cases were identified through biennial questionnaires and linkage with cancer registries and confirmed using medical record and cancer registry data. Data on hours of sleep was collected in 2009. Cox proportional hazard regression was used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) with control for age, body mass index, education, cigarette smoking, physical activity, and alcohol consumption. Results. Based on 563 incident invasive breast cancer cases that occurred from 2009-2017, of which 74% were postmenopausal, the multivariable-adjusted HRs (95% CI) for ≤5, 6, 7, and ≥9 hours of sleep, relative to 8 hours of sleep (as in the prior study), were 1.03 (0.79-1.41), 1.05 (0.84-1.37), 0.99 (0.77-1.29), and 1.07 (0.67-1.72), respectively. The HRs were similar for ER+ breast cancer (n=394), but elevated for ER- breast cancer (n=150): 1.31 (0.74-2.46), 1.38 (0.84-2.40), 1.39 (0.83-2.47), and 2.14 (0.92-4.84) for ≤5, 6, 7, and ≥9 hours of sleep, respectively, relative to 8 hours of sleep. Results were unchanged with additional control for night shift work, family history of breast cancer, and use of postmenopausal female hormones. Conclusions. Our findings are compatible with a J-shaped association of sleep duration with ER- breast cancer, but the results are also compatible with a null association. Larger sample sizes are needed to establish whether there is an effect of sleep duration on breast cancer risk in Black women.

## 93-T

Chemotherapy induced peripheral neuropathy and physical activity in women who have recently completed treatment for ovarian cancer

Carroll KE, Crane TE, Skiba MB, Basen-Engquist KM, Walker J, Kohler LN, Yung AK, Alberts DS, Thomson CA

Purpose Chemotherapy-induced peripheral neuropathy (CIPN) is a commonly reported symptom in ovarian cancer survivors which can increase the risk for falls, reduce health-related quality of life and may potentially act as a barrier to physical activity. The purpose of this study was to determine the relationship between the presence of CIPN and physical activity levels in post-treatment ovarian cancer survivors enrolled in the Lifestyle Intervention for oVarian Cancer Enhanced Survival (LIVES) study, GOG/NRG 0225. Methods The LIVES study is an NRG/NCORP sponsored trial, evaluating whether ovarian cancer survivors randomized to a telephone-based diet and physical activity intervention versus an attention control for 24 months will have longer progression-free survival. Severity of CIPN (0-10) and self-reported physical activity (total and recreational MET hr/week) were collected at baseline tusing the MD Anderson Symptom Inventory for Ovarian Cancer and the Arizona Physical Activity Questionnaire. Multiple linear regression models adjusted for age, body mass index (BMI), total number of symptoms, co-morbidities, education, marital status, smoking status, race and ethnicity were used to evaluate the relationships between CIPN and total as well as recreational physical activity. Results Complete data were available from 380 women participating in the LIVES trial. Average age and BMI of the women was $59.3 \pm 9.5$ years and $27.7 \pm 6.1$ kg/m2, respectively. Eighty percent of ovarian cancer survivors reported the presence of CIPN at study enrollment with an average severity score of $4.8 \pm 2.5$. Women reported an average of $263.3 \pm 36.3$ total MET hours/week and an average of $15.32 \pm 17.7$ recreational MET hours/week. Both total MET hr/week (-0.02%; 95%CI: -0.48, 0.45) and recreational MET hr/ week (1.1%, 95%CI: -3.4, 5.6) were not significantly associated with CIPN. Conclusions These data suggest CIPN is not associated with physical activity in women completing treatment for ovarian cancer. Future analyses will evaluate this relationship overtime and by treatment arm in the entire sample (n=1200) with adjustment for time since treatment completion.

## 94-T

Tobacco smoking, chewing habits, alcohol drinking and the risk of head and neck cancer in Nepal

Chang CP, Siwakoti B, Sapkota A, Gautam DK, Lee YA, Monroe M, Hashibe M

Purpose of the study. Several local types of tobacco smoking, chewing products and alcoholic beverages are frequently consumed in Nepal. Even though tobacco smoking and alcohol drinking are important risk factors for head and neck cancer (HNC), there are no studies that have evaluated these local habits and their influence on the risk of HNC in Nepal, to our knowledge. This study aimed to investigate the impact of tobacco smoking, chewing habits and alcohol drinking on HNC risk in Nepal. Methods. A case-control study was conducted at B.P. Koirala Memorial Cancer Hospital, the main cancer hospital in Nepal. We included 551 incident HNC cases and 599 controls, from 2016 through 2018, frequency matched by age ($\pm 5$ years), sex, race/ethnicity and residence area. Information on tobacco smoking, chewing and alcohol drinking habits were collected using a standardized questionnaire. The types of tobacco smoking included cigarette, bidi and choor/hankat. The types of chewing habits included pan (with and without tobacco), pan masala (with and without tobacco), khaini, surti, zarda, zarda and kiwam, supari, and lwang. The types of alcoholic beverages included beer, whisky, rakshi, jaand/chayang, thongha, and wine. The odds ratios (OR) and 95% confidence intervals (CI) were estimated using unconditional logistic regression adjusting for potential confounders, such as age, sex, education, race/ethnicity, family monthly income, area of residence, duration and frequency of tobacco smoking, chewing habits and alcohol drinking where appropriate. Results. We observed increased HNC risks for ever tobacco smoking (OR, 95% CI: 1.50, 1.10-2.01), ever chewing habits (OR, 95% CI: 2.36, 1.75-3.18) and ever alcohol drinking (OR, 95% CI: 1.61, 1.17-2.23) after adjusting for potential confounding factors. When combining three habits, people who smoked, chewed and drank had a 11.94 fold increase (95% CI: 6.49-21.98) in the risk of HNC compared to people who did not have those habits. The joint effect between tobacco smoking and alcohol drinking was greater than multiplicative (ratio of ORs, 95% CI: 3.07, 1.05-8.99) on HNC risk among non-chewers. Conclusions. Local products for tobacco smoking, chewing habits and alcohol drinking were independently associated with the risk of HNC. High

# Poster Session Abstracts

## 95-T

### Exploring the Effects of a High Chlorophyll Dietary Intervention to Reduce Colon Cancer Risk in Adults: The Meat and Three Greens (M3G) Feasibility Trial

**Smith KS**, Riviere AJ, Braxton-Lloyd K, Demark-Wahnefried W, Arthur AE, Frugé AD

Purpose: Preclinical and epidemiological observations suggest green leafy vegetables (GLV) may reduce the risk of red meat (RM) induced colonic DNA damage and colon cancer (CC). We sought to determine the feasibility of a high GLV dietary intervention in adults with increased risk of CC (NCT03582306). Methods: This was a 12-week randomized controlled crossover trial. Eligibility criteria included body mass index (BMI) greater than 30kg/m2, habitual intake of 5+ servings RM and <2 servings GLV per week, and ability to store/cook frozen GLV. Exclusion criteria included previous diagnosis of CC and use of antibiotics, corticosteroids, immunosuppressive agents, or commercial probiotics within the past 4 weeks. Participants were stratified by gender and randomized to 2 arms: immediate or delayed (post-4-week washout) intervention. During the 4-week intervention period, participants were provided with frozen GLV and counseled to consume 1 cooked cup equivalent daily. The primary outcomes were: accrual-recruiting 50 adults in 9 months; retention-retaining 90% of the sample at crossover and 80% at completion; and adherence-meeting GLV/chlorophyll intake goals 90% of days. Adherence data were collected for the previous three days twice weekly. At each of 4 study visits, anthropometrics, stool, saliva, and blood were obtained, as well as surveys assessing physical activity and diet acceptability. Results: Fifty adults were recruited in 44 days. Participants were 48±13 years of age, 62% female, 80% Caucasian, with average BMI at screening of 35.9±5.1. One participant withdrew consent due to aggravation of diverticulitis, and one was lost-to-follow-up after illness, both in the immediate group. To date, 34 participants have completed the study and all remaining participants (n=48, 96%) have been retained through the crossover period. During the intervention phase, participants have consumed some GLV 88.4% of days, though the adherence goal of 1 cup was met 73.6% of days. Conclusions: This 12-week crossover RCT aimed to increase GLV consumption has met 2 of 3 feasibility targets to date. Analysis of biological specimens will determine the effects of GLV on gut microbiota, oxidative DNA damage, and inflammatory cytokines. Keywords: chemoprevention, colon cancer, diet

## 96-T

### Association between recent ultraviolet radiation exposure and cutaneous beta human papillomavirus infection

Zhao Y, Fenske N, Cherpelis B, Messina J, Giuliano AR, Mckay-Chopin S, Gheit T, Tommasino M, Rollison DE

Purpose: Keratinocyte carcinoma (KC), comprised of squamous cell carcinoma and basal cell carcinoma, is the most common cancer in the United States. The effects of ultraviolet radiation (UVR), an established risk factor for KC, on cutaneous human papillomavirus (HPV) infection, a suggested risk factor currently under investigation, are not well established. We assessed cross sectional associations between UVR exposure and cutaneous beta HPV infection, using data obtained from the Viruses in Skin Cancer Study (VIRUSCAN), a prospective cohort study conducted at the Moffitt Cancer Center and the University of South Florida. Methods: Eyebrow hairs (EBH), skin swabs (SSW) and spectrophotometer-based measurements of recent UVR exposure were obtained from 1,179 skin cancer screening patients enrolled in the VIRUSCAN study. Viral DNA was measured using a multiplex PCR assay for 46 beta HPV types in both skin swab samples and eyebrow hair follicles. Logistic regression was used to examine the association between UVR exposure and cutaneous HPV infection in individual sites. Ordinal logistic regression was used to examine the effect of UVR exposure on the trend of having the same HPV infection across two sites, adjusted for age and sex. Results: Patients with higher UVR exposure were more likely to test positive for beta HPV 19, 47, 100 and 145 in EBH. In SSW, beta HPV 5, 38, 49, 76, 100, 145 were positively associated with UVR exposure. When considering viral infection across two sites, we found UVR exposure to be significantly associated with the odds of having infection in both EBH and SSW for beta HPV 19 (OR = 1.12, 95% CI: 1.03-1.23, p-trend = 0.04), 38 (OR = 1.09, 95% CI: 1.04-1.13, p-trend < 0.01), 76 (OR = 1.06, 95% CI: 1.00-1.12, p-trend = 0.01), and 100 (OR = 1.10, 95% CI: 1.04-1.17, p-trend = 0.01). Conclusions: UVR exposure is positively associated with beta cutaneous HPV at the type level, in both individual sites and across skin swab and eyebrow hair. Future research is needed to better understand the biological mechanisms mediating the associations between UVR and cutaneous HPV infection.

## 97-T

### Hair dye and chemical relaxers in relation to breast cancer risk in a large US population of black and white women

Eberle CE, Sandler DP, Taylor KW, White AJ

Purpose: Evaluate the relationship between use of hair dye and chemical relaxers and breast cancer risk by race. Methods: Eligible Sister Study participants (N=45,449) ranged in age from 35-74 and had a sister with breast cancer but were breast cancer-free themselves at enrollment (2003- 2009). A self-completed questionnaire on use of personal care products included questions on the use of hair dye and other hair products in the past 12 months. Cox proportional hazards models were used to estimate adjusted hazard ratios (HRs) and 95% confidence intervals (95% CIs) for the association between hair treatments and incident breast cancer. Results: Over an average 8.3 years of follow-up, 2,759 breast cancer cases were identified. 55.4% of participants had used permanent dye at least once in the past 12 months. Overall, breast cancer was modestly associated with personal use of permanent hair dyes (HR=1.07, 95% CI 0.99-1.16) as well as with applying semi-permanent dye to another person (HR=1.30, 95% CI 1.07-1.59). A higher risk of breast cancer was also observed for chemical straighteners or relaxers: both personal use (HR=1.21, 95% CI 1.01-1.44) and application to others (HR=1.27, 95% CI 0.99-1.63). Associations were stronger for black women among whom breast cancer risk was elevated for permanent dye use (HR=1.43, 95% CI 1.07-1.89), especially for use of dark dyes (HR=1.52, 95% CI 1.08-2.06). Conclusions: We observed a higher risk of breast cancer associated with both application to another person and personal use of chemical straightener or relaxers and for personal use of hair dye, especially in black women. These results support evidence that endocrine disrupting compounds and known carcinogens found in hair dyes and chemical relaxers, both common exposures, may be relevant to breast carcinogenesis. The stronger associations observed for black women are consistent with toxicological evidence that hair products used predominately by black women may contain more hormonally-active compounds.

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### Clinicopathologic consequences of allostatic load among Black women with breast cancer

Xing CY, Lin Y, Bandera EV, Hong CC, Plascak JJ, Qin B, Doose M, Demissie K, Ambrosone C, Llanos AAM

Purpose of the study: In the U.S., Black women tend to have higher cumulative physiological stress compared with women of other races/ethnicities, which may contribute to aggressive breast cancer (BrCa) clinicopathology. However, few empirical studies have tested this hypothesis among Black women. The aim of this study is to examine the association of allostatic load (AL; as a measure of cumulative physiological stress) and BrCa clinicopathology among Black women with BrCa. Methods: In a sample of 409 Black women with non-metastatic BrCa enrolled in the Women's Circle of Health Study, we estimated pre-diagnostic AL using two adapted measures: AL measure 1 (lipid profile-based measure – assessed by systolic and diastolic blood pressure [SBP, DBP], high-density lipoprotein, low-density lipoprotein, total cholesterol, triglycerides and glucose levels, waist circumference, and use of medications to treat diabetes, hypertension, or hypercholesterolemia) and AL measure 2 (inflammatory index-based measure – assessed by SBP, DBP, glucose and albumin levels, glomerular filtration rate, body mass index, waist circumference, and use of medications described above). We used kappa analysis to assess agreement between the two AL measures and multivariable-adjusted models to assess the associations of interest. Results: AL measures 1 and 2 demonstrated moderate-to-fair agreement (kappa=50.4%). Higher AL was found to be a significant predictor of higher tumor grade (poorly differentiated vs. well/moderately differentiated) using AL measure 1 (aOR=2.17; 95% CI: 1.20, 3.92) and AL measure 2 (aOR=1.62; 95% CI: 1.04, 2.54). Higher AL measure 2 was also a significant predictor of larger tumor size (≥2cm vs. <2cm; aOR=1.57; 95% CI: 1.00, 2.45). There were also suggestive relationships between higher AL and estrogen receptor- status and advanced tumor stage, albeit with p-value >0.05. Conclusions: These findings suggest that unfavorable BrCa clinicopathologic characteristics, namely higher tumor grade and larger tumor size, are potential consequences of high AL among Black women. These preliminary findings contribute to important gaps in knowledge related to the mechanisms involved in the development of aggressive BrCa phenotypes. Key words: breast cancer clinicopathology; allostatic load; Black women

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### Androgens and the risk for breast cancer in women with a family history

Houghton LC, Wei Y, Ma X, Kehm R, Hartmann M, Wudy SA, Terry MB

Purpose of the study: Several studies in average risk cohorts have supported an association between androgen levels and increased breast cancer risk but these studies have not been conducted in women with a family history of breast cancer. Methods: We examined the role of androgens across a spectrum of absolute breast cancer risk predicted by family pedigree information in the New York site of the Breast Cancer Family Registry (BCFR). We conducted a prospective, nested case control with 62 cases and 124 controls matched on menopausal status, age and race. We measured concentrations of 8 androgens and creatinine using GC-MS in urine samples collected at baseline enrollment into the cohort. Overall coefficients of variation ranged from 4-11%. We calculated predicted 1-year absolute risk based on the Breast and Ovarian Analysis of Disease Incidence and Carrier Estimation Algorithm (BOADICEA). We used conditional logistic regression to estimate the odds ratios (ORS) and 95% confidence intervals (CI). We assessed confounding by established breast cancer risk factors including various, reproductive, anthropometric, lifestyle variables and retained year of birth, parity/breastfeeding and physical activity in the parsimonious model. Results: Higher androgen concentrations were associated with increased risk of breast cancer across all 8 androgens with statistically significant associations specifically for one logged unit increase of: androsterone (OR=2.2; 95%CI=1.2-4.1); 11-hydroxy- androsterone (OR=2.5; 95%CI=1.3-5.0); 11-oxo-androsterone (OR=2.0; 95%CI=1.0-4.0). These associations remained after adjusting for absolute risk score and BMI. Conclusions: Our results support that androgens are associated with breast cancer risk across the spectrum of risk and are independent of body size.

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### Gut microbiome differences between immune checkpoint inhibitor responders and non-responders in non-small cell lung cancer

Vieira da Silva W, Gharaibeh RZ, Newsome R, Paul S, Hogue SR, Bowles KE, Robinson LA, Antonia S, Conejo-Garcia J, Jobin C, Pierce CM

Purpose: The microbiome has been recognized as a modifier of tumor initiation, progression, and therapeutics. This prospective study aims to understand the role of the microbiome in patients with non-small cell lung cancer (NSCLC) undergoing treatment with immune checkpoint inhibitor (ICI) therapy, and examine whether gut microbiota are associated with clinical response. Methods: We examined baseline and follow-up stool samples of stage III/IV NSCLC patients (n=26) undergoing ICI (anti-PD-1, PD-L1, CTLA-4). Stool specimens were collected at home within 72hr of the initial ICI dose (baseline) and after the 4th ICI dose (follow-up), preserved in RNAlater, and extracted using the Qiagen PowerLyzer PowerSoil DNA isolation kit. The V1-V3 region of the 16S rRNA gene was sequenced on Illumina MiSeq, and raw data were processed using QIIME2. Principal coordinates analyses and linear discriminant analysis effect size were used to identify differences in gut microbial profiles between clinical responders (cR) and non-responders (cNR). For this analysis, cR (n=15) experienced complete/partial response to ICI and cNR (n=11) experienced stable/progressive disease as determined by CT scan within 6 months of treatment start.Results: Baseline gut bacterial community structures differed significantly between cR and cNR (PERMANOVA p=0.03). cR were significantly more likely than cNR to have greater abundance of Ruminococcus, Clostridiales, Christensenellaceae, Dehalobacterium, Synergistes, Alphaproteobacteria, and Lactococcus, and less likely to have Epsilonproteobacteria, Sutterella, Campylobacter, Fusobacteria, and Collinsella prior to ICI therapy. Microbial alpha diversity (within sample variation; Chao1) at baseline appeared higher among cR vs. cNR (not statistically significant). Gut microbial composition did not appear to change throughout the course of ICI treatment (PERMANOVA p=0.85). Conclusions: These results demonstrate an association between gut microbiota composition and clinical responsiveness to ICI. Our study identified additional bacterial taxa contributing to ICI clinical response in NSCLC. Future studies incorporating microbial metatranscriptomics will allow for additional insight into the functional role of gut microbiota in clinical response to ICI therapy

# Poster Session Abstracts

## 101-T

The association of physical activity and sedentary behavior with biomarkers of inflammation among women

Rolle-McFarland D, Huang T, Townsend M, Tworoger S

Physical activity (PA) and sedentary behavior (SB) have been associated with multiple chronic diseases, including cancer, diabetes, and cardiovascular disease. The impact of PA and SB on inflammatory pathways is one potential mechanism underlying these associations. The aim of this study was to assess the cross-sectional association of PA and SB with inflammatory biomarkers in the prospective Nurses' Health Studies (NHS & NHSII). We used previously collected data on c-reactive protein (CRP, N=11,104), Interleukin 6 (IL-6, N=8,037), and tumor necrosis factor alpha receptor 2 (TNFαR2, N=7,690) levels in women included as controls in previous nested case-control studies. After applying a batch-correction procedure, biomarker levels were log-transformed. Self-reported data on participation in various physical activities, time spent sitting (TSIT), and covariates were collected using questionnaires near the time of blood collection. Multivariable linear regression models were used to calculate percent differences in biomarker levels between categories of activity or sitting. After adjusting for age, menopausal status, smoking, aspirin use, hormone therapy use, and an inflammatory diet index (Model 1), CRP levels were higher among women with lower total PA. For example, CRP levels were 60.5% (p=<0.0001) higher in women with <3 versus ≥27 MET hours/week of PA. After further adjustment for BMI and TSIT, the percent difference attenuated to 22% but remained significant. Similar trends were seen with PA and IL-6 levels but not TNFαR2 levels. Similarly, in Model 1, CRP levels were higher among women with longer TSIT, particularly sitting while watching TV (55.2% comparing >41 versus ≤10 hours/week, p=<0.0001), however this was attenuated after adjustment for BMI and PA (9.8%, p=0.23). Total TSIT was not associated with IL-6 or TNFαR2, however higher TNFαR2 levels were associated with sitting while watching TV after adjusting for all covariates (6.1% comparing >41 versus ≤10 hours/week, p=0.01). These results suggest that lower PA and sedentariness may play a role in higher inflammation levels. In future analyses, we will evaluate associations with specific types of PA and assess relationships with changes in inflammatory biomarker levels over 10 years.

## 102-T

Medical radiation exposure and risk of retinoblastoma: A report from the Children's Oncology Group

Shakeel O, Pace N, Scheurer ME, Lupo PJ, Ganguly A, Bunin GR

Purpose: To evaluate the role of paternal medical radiation exposure on sporadic bilateral and unilateral retinoblastoma in offspring. Methods: Eligible patients were diagnosed with sporadic bilateral or unilateral retinoblastoma from 1998 to 2011 and treated at one of nine participating institutions. Controls were recruited from the friends and relatives of cases. Telephone interviews were conducted with parents to obtain information on demographic factors and exposures, including medical procedures prior to conception of the index child. Gonadal radiation doses were estimated utilizing PCXMC and ImPACT software. Logistic regression models were used to evaluate the associations between parental medical radiation exposure and retinoblastoma. Results: In maternal analyses, there were 298 bilateral cases, 184 unilateral cases, and 404 controls. In paternal analyses, there were 268 bilateral cases, 155 unilateral cases, and 358 controls. We found that compared to mothers without medical radiation exposure, mothers who reported a lower gastrointestinal (GI) series were more likely to have a child who developed bilateral retinoblastoma (odds ratio [OR]=6.9, 95% confidence interval [CI]: 2.9-16.4). A similar association was observed for unilateral retinoblastoma though the confidence interval included the null (OR=2.8, 95% CI: 0.8-9.7). When evaluating gonadal dose, increasing maternal exposure was associated with bilateral retinoblastoma (P for trend=0.03). Further, compared to unexposed mothers, mothers in the highest dose category were more likely to have a child who developed sporadic bilateral retinoblastoma (OR=2.3, 95% CI: 1.4-4.1). Notably, the same trend was not observed for unilateral retinoblastoma. Transversely, increasing paternal gonadal dose was associated with unilateral retinoblastoma (P for trend=0.03) but not bilateral retinoblastoma. Conclusions: These results are in contrast to previously hypothesized patterns (i.e., that maternal exposure would be associated with unilateral retinoblastoma, whereas paternal exposure would be associated with bilateral retinoblastoma due to a de novo mutation in RB1 of paternal origin). Our findings could point to a more complex etiologic framework for this important pediatric malignancy.

*- T  Denotes Trainee*

## 103

### Impact of Make Better Choices 2 (MBC2) intervention on regional patterns of DNA methylation

Hibler EA, Huang L, Andrade J, Spring B

Purpose: The study aim was to examine the impact of the MBC2 healthy diet and activity intervention on patterns of epigenome-wide DNA methylation. Methods: The MBC2 study was a 9-month randomized controlled trial conducted between 2012-2014 among adults aged 18-65 with non-optimal levels of health behaviors. The study compared three 12- week interventions: 1) Simultaneously increase exercise and fruit/vegetable intake, while decreasing sedentary leisure screen time; 2) Sequentially increase fruit/vegetable intake and decrease leisure- screen time first, then increase exercise; 3) Control: increase sleep; decrease stress. We collected blood samples at baseline, 3 and 9 months, and measured DNA methylation using the Illumina Infinium MethylationEPIC (850k) BeadChip. We examined region-based differential methylation patterns using linear regression models with the false discovery rate of 0.05. We conducted pathway analysis using gene ontology, KEGG, and IPA canonical pathway databases. Results: We found no differences between the MBC2 population (n=340) and the subsample with DNA methylation measured (n=68) on baseline characteristics or the impact of the intervention on behavior change. We identified no differentially methylated regions at baseline between the control versus intervention groups. At three versus nine months, we identified 154 and 298 differentially methylated regions, respectively, between controls compared to pooled samples from sequential and simultaneous groups (which showed comparably large, sustained diet and activity improvements). Analysis in the GO database identified two pathways related to hemophilic cell adhesion and cell-cell adhesion via the plasma membrane. In the IPA analysis, we found pathways related to carcinogenesis including PI3K/AKT, Wnt/β-catenin, sonic hedgehog, and p53 signaling. We observed overlap between three and nine months, including the GDP-L-fucose biosynthesis I, methylmalonyl metabolism, and e strogen-mediated cell cycle regulation pathways. Conclusions: These preliminary results demonstrate that intervention producing multiple diet and activity improvements impacts patterns of DNA methylation in gene regions related to cell cycle regulation and carcinogenesis with potential implications for cancer prevention.

## 104-T

### Non-metallic hazardous air toxics and breast cancer risk in the Sister Study cohort

Niehoff NM, Gammon MD, Keil AP, Nichols HB, Engel LS, Sandler DP, White AJ

Purpose: Some hazardous air toxics are potentially carcinogenic, but are inconsistently associated with breast cancer risk in women. Whether metabolic factors modify these associations is unknown. We focused on 29 non- metallic air toxics classified as mammary gland carcinogens in animal studies. Methods: Participants included 49,718 women from the Sister Study, a United States-based prospective cohort. Census tract air toxic concentration estimates from the 2005 National Air Toxics Assessment were linked to each participant's baseline residential address. Multivariable-adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated using Cox regression, with each air toxic modeled individually. Body mass index (BMI) and physical activity were considered as modifiers. Multipollutant mixtures were identified using classifi- cation trees. Results: Over ~8.4 years of follow-up, 2,975 women were newly diagnosed with breast cancer (invasive or ductal carcioma in situ). In individual pollutant models, several air toxics were associated with increased risk; of these, methylene chloride was most strongly and consistently associated with breast cancer overall (HR quintile 4vs1=1.21 (95% CI=1.07-1.38)) and estrogen receptor positive (ER+) invasive breast cancer (HR quintile 4vs1=1.28 (95% CI=1.08-1.52)). For six air toxics (2,4-toluene diisocynate, benzidene, ethylene dichloride, ethylene oxide, hydrazine, and propylene dichloride), associations were stronger among overweight/obese (vs. non-overweight/obese) women (p<0.05). In classification tree multi-pollutant groups related to breast cancer, age, methylene chloride, BMI, and four other air toxics (propylene dichloride, ethylene dibromide, ethylidene dichloride, styrene) were identified. Conclusions: Some non-metallic air toxics, particularly methylene chloride, were associated with elevated risk overall and for ER+ breast cancer. Overweight/obese women may be particularly susceptible to air toxics.

- T *Denotes Trainee*

## 105

### Can we use DNA from tumor samples for GWAS of cancer risk?

Scheurer ME, Dharia P, Armstrong TS

Purpose: We sought to determine if tumor samples could be utilized as a source of germline DNA to perform genome-wide association studies for rare cancers with high mortality early after diagnosis, using adult glioblastoma as an example. Methods: Using data from a GWAS of chemotherapy-related toxicities in adults with glioblastoma treated on a cooperative group front-line therapy trial, we assessed the concordance of genotypes derived from DNA from blood samples vs tumor in 143 subjects. Genotypes were generated using Illumina Infinium-based SNP arrays. Tumor DNA was extracted from FFPE tissue either near the time of diagnosis or at the end of the trial. Buffy coat from blood collected at a clinic visit was frozen until extraction at the end of the trial. Overall call rates were determined per sample and chromosome. Concordance of genotype calls was determined per sample and chromosome between blood- and tissue-based genotypes. Concordance was also compared based on tumor copy number variation and loss of heterozygosity. Results: The mean call rate for individual samples derived from tumor was 94.7 (range: 65.4- 99.7). The mean concordance among tumor samples compared to blood for autosomal chromosomes in individual samples was 91.4% (range: 27.9-99.9). Samples that were genotyped using DNA extracted from FFPE closer to diagnosis had a consistently higher concordance (mean=93.82) compared to those extracted at the end of the trial (mean=84.72). Concordance was consistently lower for chromosomes 10, 13, and 21. These chromosomes also showed more areas of loss of heterozygosity and copy number alterations. Conclusions: In general, genotypes generated from glioblastoma tumor tissues had fairly good concordance with genotypes generated from blood samples. However, some individual tumors performed poorly with low call rates and high percent of missing genotypes. Interestingly, the performance varied by chromosome, indicating that somatic genomic alterations, especially loss of heterozygosity and copy number variations, contribute to poorer genotyping performance when using tumor DNA as the source. In particular, the areas that we identified with poor performance have been shown to exhibit high levels of copy number deletions in The Cancer Genome Atlas project.

## 106-T

### Impact of Obesity and Expression of Obesity-Related Genes in the Progression of Prostate Cancer in African American Men

Ilozumba MN, Chornokur G, Zgibor JC, Schwartz S, Park J

Purpose of the Study To identify the association between obesity and the biochemical recurrence of prostate cancer; association between the expression of obesity-related genes and the biochemical recurrence of prostate cancer after initial surgery among obese African American men and non-obese African American men. Methods The primary outcome of interest was biochemical recurrence of prostate cancer (BCR). There were 48 African American prostate cancer patients in the study. We collected 127 tissue samples [normal, prostatic intraepithelial neoplasia (PIN), and tumor] from patients. We assembled 99 obesity-related genes and determined the levels of their expression with the use of nCounter gene expression assays by Nanostring Technologies. Trend test of gene expression among tumor, PIN and normal tissues was conducted. Tests for association between obesity and BCR; and gene expression and BCR were conducted using logistic regression models at a 95% confidence interval respectively. Patients were followed up from the date of first surgery to the date of biochemical recurrence or date of last follow-up and a Kaplan Meier curve was generated depicting the time to event (biochemical recurrence) among obese and non-obese African American prostate cancer patients. Results 43 obesity-related genes were significantly associated with biochemical recurrence. The association between obesity and BCR showed a non-significant two-fold increased risk of biochemical recurrence in obese African American men compared to non-obese African American men, (OR= 2.032, 95% CI = 0.220 - 18.765, p-value= 0.5318). 20 genes showed an upward trend in gene expression among normal, PIN and tumor tissue samples including ALOX12, ALOX15, CRYBB2, EIF5A, ERG, GNPDA2, HNF1B, HSD3B1, KLK4. Conclusion Our study did not find an association between obesity and biochemical recurrence of prostate cancer. However, it elucidated some obesity-related genes that could explain prostate cancer carcinogenesis.

## 107

### Acceptability and Feasibility of a Mindfulness-Based Intervention Program for HCT Cancer Caregivers

**Malkhasyan L**, Lau P, Schmidt J, Jim H, Pidala J, Vinci C

Purpose: High levels of stress have been reported amongst allogeneic HCT cancer caregivers and few treatment programs exist to provide stress management skills to this population. A pilot study was conducted to determine the feasibility and acceptability of a six-session mindfulness-based program designed specifically to meet the needs of allogeneic HCT cancer caregivers. Method: Participants completed questionnaires at baseline, end of treatment, and at a one month follow-up. Feasibility criteria consisted of participant accrual, retention, and homework completion. Measures of acceptability included the Client Satisfaction Questionnaire (CSQ; scale of 1-4 [1=Poor; 4=Excellent]) and three questions developed for this study to capture overall usefulness of the program; the usefulness of the program in managing stress; and likelihood of continued usage of mindfulness-based strategies (scale of 1-6 [1=Not very useful; 6=Very Useful]). Results: Twenty-one caregivers (mean age 57.95; 79% female) were enrolled and completed baseline questionnaires. Of these, 19 attended at least one treatment session, 15 attended at least 4, and 13 attended all sessions. Thirteen completed the post- treatment questionnaires and 14 completed follow-up questionnaires. Participants reported engaging in at least one mindfulness practice daily on 58% of the days enrolled in the study. Results from the CSQ found the program to be highly satisfactory (M=3.68; SD=.28), with higher scores indicating greater satisfaction. Participants responded positively to questions related to overall usefulness of the program (M=5.36; SD=.93), usefulness of the program to help manage stress (M=5.14; SD=.95), and likelihood of continuation of strategy use in the future (M=5.50; SD=1.16). At the one month follow up, 100% of participants endorsed still using some of the skills learned during the program. Discussion: These pilot study results found the mindfulness intervention to be both feasible and acceptable. Limitations include: small sample size, homogenous population, and lack of a control group. Larger, future studies are warranted to determine the efficacy of this intervention in relation to a comparison treatment condition.

## 108

### Feasibility and usability of mobile distress screening for cancer survivors

Chow PI, Kennedy EM, Chambers N, **Cohn WF**

Purpose: To determine feasibility and usability of mobile distress screening over time for cancer survivors Methods: A convenience sample of cancer patients recruited from an infusion center waiting room. Eligible patients completed the Patient Health Questionnaire-4 (PHQ-4) each week for four weeks through a secure link text messaged to their smart phones. The proportion of participants who completed each of the weekly assessments and how long it took participants to complete the distress screeners were measured. A telephone survey collected user feedback and satisfaction with questions using a 7 point (1=strongly disagree; 7=strongly agree) scale and supplemental open-ended questions to gather qualitative data. Results: 52 cancer patients (62% female; median household income $50-70K). Patients completed the mobile distress screener 75% of time; 57% of patients completed all four screeners. Completion time was <1 minute. Participants endorsed high satisfaction ($\overline{x}$=6.5) and ease of use ($\overline{x}$=6.9) with little concern about privacy ($\overline{x}$=1.9). Many participants would be willing to maintain use throughout cancer care ($\overline{x}$=6.3) and would be willing to have their provider see distress scores ($\overline{x}$=6.7) so that they could provide support. Conclusion: Findings support the feasibility and usability of mobile distress screening among cancer survivors. These survivors found mobile distress
screeners easy to use and were willing to complete them at multiple time points. As cancer centers continue to develop programs to screen for and address psychosocial distress it is feasible to incorporate mobile assessment strategies.

*- T Denotes Trainee*

## 109

### Pilot Randomized Controlled Trial of a Dyadic Yoga Program for Head and Neck Cancer Patients Undergoing Radiotherapy and their Family Caregivers

**Milbury K**, Rosenthal D, Ngo-Huang A, Fuller C, Mallaiah S, Durrani S, Bruera E, Cohen L

Background: Radiotherapy (RT) to treat head and neck cancer (HNC) may result in debilitating toxicities and functional problems. Yoga therapy delivered concurrently to RT may buffer against treatment-related sequelae. The purpose of this pilot RCT was to establish feasibility and preliminary efficacy of a yoga intervention. Because family caregivers report low caregiving efficacy and high levels of distress, we included them in this trial as active study participants. Methods: HNC patients undergoing ≥ 25 fractions of RT and their caregivers were randomized to a 15-session yoga intervention or a usual care control (UC) group. Prior to RT and randomization, both groups completed standard quality of life (QOL) self-report (SF-36) and cervical range of motion (CROM) measures. Patients' weight loss and health utilization was documented over the course of RT. QOL and CROM was reassessed within 1 week of completing RT. Results: We approached 70 eligible dyads of which 50 (71%) consented, 44 were randomized and 41 (93%) completed all assessments. Patients (mean age: 60.3 yrs., 31% female) and caregivers (mean age: 58.7 yrs., 76% female, 78% spouses) completed a mean of 13.2 sessions (range 8-15), and all of them rated the program as "very useful." Opening-ended acceptability items were positive. Change scores controlling for relevant covariates revealed significant group differences in patients' weight loss during the last week of RT so that patients in the yoga group maintained more weight than the control group (Yoga: -3.28 kg vs UC: -6.97 kg; P<.05). Patients in the yoga group were significantly less likely to undergo a feeding tube placement and be admitted to the hospital relative to the UC group (both P<.05). Patients in the yoga group demonstrated improved CROM compared with the UC group (P<.01). Compared to the UC group, the yoga group reported clinically significant better QOL in the domains of emotional and social function for patients and physical role function for caregivers. Conclusion: Yoga therapy appears to be a feasible, acceptable, and possibly efficacious behavioral supportive care strategy for HNC patients undergoing RT. A larger efficacy trial with a more stringent control group is warranted.

## 110-T

### The Mediation Effect of Body Image on Physical Activity and Psychological Health in Older Female Cancer Survivors

Zhang X, Pennell ML, Bernardo BM, Clark, J, Focht BC, Krok-Schoen J, Crane TE, Shadyab A, Chlebowski R, Paskett ED

Purpose: To quantify the association of physical activity, body image and psychological health among older female cancer survivors and to explore the mediation effect of body image on physical activity and psychological health. Methods: Secondary data analysis was conducted using the Women's Health Initiative (WHI) Life and Longevity after Cancer (LILAC) Study. Surveys assessed body image (appearance, attractiveness, scars), physical activity (sedentary: no exercise/week; inactive/active: ≥1 days of exercise/week, due to limited women reported as active), and psychological health (depression, anxiety, distress). The natural indirect effect was used to estimate the mediation effect of body image concerns on the association between physical activity and psychological health. Results: Among 5336 female cancer survivors age 64-95 years, the average time since cancer diagnosis was 9.5±4.9 years, and 51% reported sedentary. Participants had depressive symptoms (16%), anxiety (70%), and psychological distress (60%); had body image concerns with appearance (3%), attractiveness (20%), and scars (21%). Compared to inactive/active women, sedentary women had a higher odds of having concerns with appearance (OR=1.88, 95%CI: 1.32, 2.67) and a higher risk of depressive symptoms (RR=1.25, 95%CI: 1.09, 1.43). Compared to women with no appearance concerns, women with appearance concerns had a higher risk of depressive symptoms (RR=2.4, 95%CI: 1.89, 3.04), anxiety (RR=1.10, 95%CI: 1.01, 1.21), and distress (RR=1.29, 95%CI: 1.17, 1.42). Similar associations were observed for concerns with attractiveness and scars on depressive symptoms, anxiety, and distress. Body image concerns mediated the association between physical activity and psychological health: sedentary behavior was associated with increased probability that a woman was concerned about her appearance, which was associated with higher risk of depressive symptoms (P=0.008) and distress (P=0.016). Conclusion: Older, long-term female cancer survivors experienced body image concerns. Body image mediated the association between physical activity and psychological health. Our findings highlight the need for clinicians and researchers to address body image concerns in female cancer survivors to improve their psychological health.

| 111 | 112-T |
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## Cognitive complaints and longitudinal quality of life in older breast cancer survivors: findings from the Thinking and Living with Cancer Study

**Kobayashi LC**, Cohen HJ, Zhai W, Small B, Luta G, Zhou X, Hurria A, McDonald B, Graham D, Jim H, Saykin AJ, Ahles T, Mandelblatt J

Purpose: Cognitive complaints increase in frequency with aging and are sometimes reported by breast cancer survivors, but the effects of cognitive problems on multiple dimensions of quality of life among older survivors are unknown. We investigated the relationships between self-reported cognitive function and quality of life (QOL) in older survivors. Methods: Data were from 344 women aged 60-98 with non-metastatic breast cancer in the multi-site Thinking and Living with Cancer Study recruited from 2010-2015. Cognitive complaints following surgery and before systemic therapy (baseline) were measured using the FACT-Cog scale. QOL was measured using the FACT functional, physical, social, and emotional scales at baseline and 12- and 24-months later, scaled to be from 0-100 with higher scores representing better QOL. Linear mixed effects models assessed the relationships between baseline FACT-Cog score quartile and QOL domain scores over 24 months, adjusted for age, race, education, comorbidities, anxiety, depression, treatment modality, and study site. Results: Survivors in the lowest quartile of self-reported cognition had worse functional, physical, and emotional well-being at baseline than survivors in the highest cognition quartile. For example, adjusted mean physical wellbeing was 71.4 (95% CI: 67.4-75.4) vs. 85.8 (95% CI: 81.7-89.8) for the lowest vs. highest self-reported cognition quartile. Poor baseline self-reported cognition remained associated with worse physical well-being at the 24-month follow-up: adjusted mean physical well-being = 76.7 (95% CI: 72.0-81.4) vs. 84.8 (95% CI: 80.1-89.6) for lowest vs. highest quartile. Regardless of self-reported cognition, average functional and emotional well-being improved, but social well-being worsened for survivors over time. Conclusions: Older breast cancer survivors with greater cognitive complaints prior to systemic therapy have persistently physical function than those with fewer complaints over a two-year follow-up. Cognitive complaints may be a marker of survivors needing surveillance or intervention. Future work should investigate the potentially reciprocal relationships between cognition (self-reported and according to neuropsychological tests) and physical function in older breast cancer survivors.

## Financial Hardship among Rural Cancer Survivors in the U.S.

Odahowski C, Zahnd W, Davis M, Perry C, Vanderpool R

Purpose: This study examined geographic differences in financial hardship among cancer survivors. Methods: We used data from the 2011 Medical Expenditure Panel Survey supplement "The Effects of Cancer and Its Treatment on Finances" to investigate rural-urban differences in the financial experience of 1,492 cancer survivors. Urban and rural designations were assigned using metropolitan statistical areas from the Office of Management and Budget with micropolitan areas defined as rural and metropolitan areas as urban. We combined four survey questions to create a measure of overall material financial hardship: borrowed money/in debt, filed bankruptcy, made other financial sacrifices, unable to cover medical costs. We used multivariable logistic regression to produce predicted probabilities and odds ratios for patient factors associated with overall material financial hardship, controlling for age, education, race, marital status, health insurance, and time since last cancer treatment. Preliminary Results: A higher proportion of rural cancer survivors reported material financial hardship than urban survivors (23.9% vs. 17.1%). Among rural survivors, non-white race (OR=3.21) and time since last cancer treatment (1-4 years: OR=12.99; 5+ years: OR=7.49) were associated with increased odds of material financial hardship. Also among rural survivors, those under age 65 and uninsured had lower odds of material financial hardship (OR=0.16) compared to those under age 65 and with private insurance. Among urban cancer survivors, only insurance type was associated with material financial hardship for those under age 65. Urban survivors under age 65 with public insurance (OR=2.89) and the uninsured under 65 years (OR=5.13) had higher odds of material hardship when compared to urban survivors under age 65 on private insurance. Conclusions: Rural cancer survivors experienced higher rates of material financial hardship compared to those living in urban areas. Although insurance type was an important factor for both groups, race and time since treatment were also significant among rural cancer survivors. Future clinically-based interventions should aim to address the financial burden among minority and uninsured rural cancer survivors.

## 113-T

**Ovarian cancer survivors' views of factors that influenced their exceptional survival: a qualitative study**

Alimujiang A, Khoja L, Wiensch A, Pike MC, Webb P, Chase A, Richardson J, **Pearce CL**

Introduction Although most women with high-grade serous ovarian cancer (HGSC) die within five years, approximately 15% will survive for 10 or more years. The factors contributing to this exceptional survival are thought to be a complex interaction between clinical, genetic, immunologic, and lifestyle factors. The purpose of this study is to qualitatively explore factors that may influence exceptional ovarian cancer survival. Methodological Approach Four focus groups, one in Los Angeles (California), Ann Arbor (Michigan), New York (New York) and Edmonton (Alberta, Canada), were conducted. Women previously diagnosed with HGSC who have survived 5 or more years were invited to participate. Physical activity, diet, meditation, prayer, treatment, integrative medicine, and side effects were explored in the semi-structured focus group interviews. The groups were audiotaped and transcribed. The transcriptions were coded by two individuals using grounded theory. The coded transcripts were analyzed using Dedoose. Findings Of the 26 women who participated, 24 were diagnosed with HGSC. Two women with non-HGSC did not meet our inclusion criteria, but were not asked to leave. Among the 24 women with HGSC, 19 have survived 10 or more years, two 8-9 years and three 5-7 years; all but one woman had stage III or IV disease. Three overarching themes were uncovered: (a) Survivors were highly motivated to improve lifestyle factors, including but not limited to fitness and diet; (b) Survivors had a strong life purpose, which manifested as positivity, taking charge, and self-advocacy; and (c) Survivors were able to draw on strong support systems, which included family, friends, support groups, faith, and healthcare workers. Conclusion This study sheds light on how the specific behaviors and attitudes of patients may contribute to their long-term survival with HGSC. Focus groups are preparatory to further prospective studies that will determine whether short term and long term survivors differ on these characteristics. Our results highlight the need for more research to gain better understanding of the role that life purpose and support systems play in survival with HGSC.

## 114-T

**Childhood Cancer Survivor Family Meal Preparation Practices are similar to non-Survivors and do not meet National Recommended Dietary Intake Targets**

**Raber MP**, Sharma SV, Baranowski T, Crawford K, Schick V, Markham C, Steinman E, Chandra J

Purpose: Survival rates for pediatric cancers have risen dramatically since the 1970s, but childhood cancer survivors (CCS) are at increased risk for obesity, heart disease and secondary cancers throughout life. Nutrition interventions targeting CCS families may support the health and wellness of survivors, but there is a dearth of research on survivor family food habits. The purpose of this communication is to describe and compare the food preparation practices of CCS and non-CCS families. Methods: Dyads consisting of one parent with one CCS or non-CCS child aged 5 to 17 were recruited for this study. Usual dinner preparation events were both observed and video recorded in participant homes. Data was analyzed using an index of nutrition-optimizing cooking practices relevant to survivor wellness. Other metrics collected demographics, BMI and the nutrient composition of prepared meals. Results: A total of forty parent-child dyads participated in this study. No major differences in overall food preparation index score, or specific food preparation behaviors were found between the CCS and non-CCS families. Both groups prepared meals with similar nutrient compositions during the observation sessions. Both groups' meals included excessive sugar, fat, saturated fat, carbohydrate and protein content per serving than nationally recommended intakes. Conclusions: This study revealed areas for practical nutrition intervention in CCS and non- CCS families including reducing the use of animal fats and processed foods, and increasing the replacement of refined grains with whole grains during meal preparation. Future studies should consider adopting and tailoring nutrition intervention methods that have been successful in non-CCS communities in targeting these practices.

# Poster Session Abstracts

## 115-T

### Comparative Effectiveness Analysis of Oncotype Dx Utilization on Chemotherapy Toxicity Morbidity in the North Carolina Medicaid Population

Roberson ML, Reeder-Hayes KE, Roberts MC, Wheeler SB

Purpose: The objective of this study is to quantify the impact of the 21-gene assay test, Oncotype Dx (ODX), on acute chemotherapy related adverse events (AE) in a Medicaid insured population of women with node-negative Estrogen-Receptor Positive (ER+)/ Human Epidermal Growth Factor Negative(HER2-) breast cancer. Background: Gene expression profiling, including the 21-gene assay test ODX, was developed to predict which patients with early stage ER+, HER2-, node-negative breast cancer are at highest risk of recurrence and benefit the most from using chemotherapy. The result of changes in chemotherapy use resulting from ODX testing on incidence of AE in a Medicaid population remains unexplored.Methods: A decision tree analysis was conducted to estimate the number of AE associated with ODX testing compared to usual care in two simulated cohorts of 5,000 Medicaid insured women ages 18-65 with Stages I-II node negative, ER+, and HER2- breast cancer in the state of NC. The time horizon was breast cancer diagnosis to completion of primary treatment and the outcome of interest was severe AE defined as incidence of neutropenia or anemia requiring red blood cell transfusion. Probability of receiving chemotherapy in the intervention arm was determined by ODX score distribution and in the usual care arm it was determined by stage and age of diagnosis. Chemotherapy data, toxicity, and recurrence score distributions inputs were derived from published literature using the Carolina Breast Cancer Study and North Carolina Medicaid Claims data. Sensitivity analyses were conducted to test variations in ecurrence score distributions and chemotherapy receipt. Results: In the simulation where all women receive ODX testing, 27.7% (n=1,388) of women received chemotherapy and 19.2% (n=962) had an AE. In the usual care model 41.7% (n=2,086) of women received chemotherapy and 33.5% (n=1,676) experienced an AE. Sensitivity analyses revealed that further reduction of chemotherapy use in the low- and intermediate ODX risk groups for whom chemotherapy is not indicated, would increase the benefit of testing implementation. Conclusion: Increased use of ODX for women with breast cancer in the NC Medicaid population could result in the reduction of chemotherapy associated adverse events.

## 116

### Future opportunities in cancer registry-survey data linkages: SEER-MHOS and SEER-CAHPS

Buckenmaier SS, Mollica M, Smith AW, Kent EE

Purpose: The National Cancer Institute supports two public data resources linking population-based cancer registry information with health outcome and patient experience survey data. Here we provide an overview of the resources, current projects, recent findings, and priority areas for future research. Methods: Surveillance Epidemiology and End Results (SEER) registry information are linked with the Medicare Health Outcomes Survey (MHOS) and the Medicare Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys. SEER-MHOS currently contains 15 cohorts of Medicare Advantage (MA) beneficiaries surveyed from 1998 to 2014, representing over 140K patients with >2 million MA enrollees without a history of cancer. This resource allows for studies of health-related quality of life (HRQOL) and other patient-reported outcomes (PROs) in individuals with and without cancer. SEER-CAHPS links cancer registry data with patient experiences surveys (CAHPS) and Medicare claims. This resource provides an opportunity to assess health care experiences of MA and Medicare Fee-for-Service (FFS) beneficiaries. SEER-CAHPS includes over 240K patients with cancer and 805K patients without a history of cancer. Results: SEER-MHOS and SEER-CAHPS analyses have produced manuscripts on patient HRQOL and patient experiences of health care, respectively. To date, SEER-MHOS has over 75 data use agreements, and >43 total publications. Most projects include prostate (64%), breast (58%), or cervical (58%) cancers and focus on HRQOL predictors throughout treatment. In less than two years since becoming publicly accessible, SEER-CAHPS has over 30 data use agreements and 8 publications. Most projects include individuals with breast (67%), lung (67%), and colorectal (67%) cancers and aim to understand sociodemographic and clinical factors associated with patient healthcare experiences. This presentation will provide an overview of recent findings and future research topics. Conclusions: SEER-MHOS and SEER-CAHPS provide opportunities for research on PROs and experiences of care across the cancer care continuum. Each resource provides data on a growing number of cancer survivors to help enhance our understanding of outcomes and care experiences of Medicare beneficiaries with cancer.

## 117

### Prevalence and correlates of physician skin exam in young adult melanoma survivors

**Miller KA**, Wojcik KY, Cockburn MG, In GK, Hamilton AS, Milam JE

Purpose: Annual physician skin exam is recommended for young adult (YA) melanoma survivors who are at high risk for a subsequent melanoma. This study examined prevalence and correlates of annual physician skin exam in this at-risk population. Methods: YA melanoma survivors were identified through the Los Angeles County Cancer Surveillance Program. Eligibility included diagnosis of stage 1 or greater melanoma; 5 years or more from treatment; and age < 24 in 1996-2010. Surveys took place through mail, internet, and phone. The outcome was dichotomized as "annual or more frequent" vs. "less frequent than annual" physician skin exam. Correlates included demographics (ethnicity, age, gender, health insurance); clinical factors such as stage at and years from diagnosis, follow-up with a dermatologist (vs. other provider type), having a written treatment summary, and regular source of non-cancer care; psychosocial factors included health care self- efficacy (i.e., HCSE, the perceived confidence to manage one's health care), perceived risk of recurrence, depressive symptoms, and perceived overall health status. Results: The sample (N=128) was 61% female, 84% non-Hispanic white, and 95% insured. Sixty-five percent reported annual or more frequent physician skin exam. In univariate logistic regression analyses, follow-up with a dermatologist, having a written treatment summary, regular source of non-cancer care, greater HCSE, and perceived better health were positively associated with annual physician skin exam, while Hispanic ethnicity, depressive symptoms, and longer time from diagnosis were negatively associated (P<0.05). In a multivariable model, follow-up with a dermatologist, regular source of care, greater HCSE, perceived better health and longer time from diagnosis remained significant (P<0.05). Conclusions: The majority of YA melanoma survivors reported annual physician skin exam which may be facilitated by specialized (dermatologic) follow-up and having a regular non- cancer doctor, greater HCSE, and perceived better general health. However, efforts are needed to maintain annual physician skin exam as time from diagnosis increases, as well as among Hispanic YA melanoma survivors.

## 118

### Access not adherence: patient and provider challenges of oral cancer therapies

**Murphy CC**, Lee SJC, Gerber DE, Cox JO, Higashi RT

Background: Oral cancer therapies have emerged as common alternatives to parenteral chemotherapy, comprising nearly one-third of all anticancer agents. Oral therapies may present particular challenges to racial/ethnic minority and under- and uninsured patients because of potential barriers to care and adherence issues. Little is known about how patients and providers address and overcome these challenges. We conducted a qualitative study to assess patient and provider perspectives on oral cancer therapies. Methods: We conducted semi-structured interviews with patients and providers (oncologists, nurses, pharmacists) at a tertiary referral center and county safety-net hospital, each serving distinct groups of patients in North Texas. Interviews probed perspectives on differences between parenteral chemotherapy and oral therapies, adherence, side effects, communication, cost/insurance, and processes of care. Interview transcripts were analyzed thematically using a deductive-inductive coding scheme building from our interview guide. Results: We conduced 22 patient (13 tertiary referral center, 9 safety-net hospital) and 10 provider (7 oncologists, 2 nurses, 1 pharmacist) interviews. Key themes included: (1) structural differences in parenteral chemotherapy vs. oral therapy create challenges that impact communication with patients, documentation, and provider decision-making; (2) patients and providers have divergent attitudes toward adherence; and (3) cost, insurance coverage, and patient-provider communication contribute to different patient experiences of care at the tertiary referral center vs. safety-net hospital. Conclusion: Oral cancer therapies have presented new challenges to delivery of quality cancer care. Many traditional responsibilities of providers, such as adhering to regimens, have moved more directly to patients. Nonetheless, patients reported few challenges adhering to oral therapies. Safety-net patients encountered fewer access barriers and had lower out-of-pocket costs than patients receiving care in the tertiary referral center. Our findings have identified future research opportunities to systematically monitor and support patients prescribed oral therapies.

## 119

**Evaluating the OneFlorida Clinical Data Research Network as a Potential Resource to Investigate Smoking-Related Treatment Effect Modification in Cancer Patients.**

**Salloum RG**, McAuliffe K, Dallery J, Lee J, Bian J, Huo J, Silver NL, Markham MJ, George TJ, Shenkman EA, Warren GW

Purpose. Limited surveillance data exist to examine smoking-related effect modification of treatment outcomes among cancer patients. By examining longitudinal properties of smoking status assessment, our objective was to demonstrate the potential opportunity for investigating how changes in smoking status could affect cancer treatment outcomes. Methods. The OneFlorida Clinical Research Consortium is a statewide clinical data research network that collects claims and electronic health record (EHR) data from over 15 million patients in Florida. Adult cancer patients were identified in the OneFlorida Data Trust (2012- 2017) as having ≥1 encounter with an ICD-9-CM or ICD-10-CM diagnosis code for cancer and ≥ 1 EHR-documented assessments of smoking status within 1 year of diagnosis. Patients meeting inclusion criteria were tabulated. Current and former smoking prevalence was reported by patient demographics, cancer site, and phase of care (1 year to >30 days pre-diagnosis, within 30 days of diagnosis date, >30 days to 1 year post-diagnosis). Results. Among the 102,048 cancer patients who met inclusion criteria, 50% were female, 60% were ≥ age 65, and 64% were Caucasian. Overall, 16% were current smokers and 43% former smokers. Across cancer sites, prevalence of current smoking at diagnosis was highest for cervical cancer (30%), followed by lung cancer (27%) and liver cancer (24%). Among 16,683 cancer patients reporting current smoking at last assessment, 62% had a final smoking assessment >30 days after diagnosis and 49% had ≥ 2 assessments at or following a cancer diagnosis. Among patients who were current smokers at earliest available assessment in the EHR (n=18,664), 51% remained current smokers and 15% transitioned to former smokers. Conclusions. Clinical data from the OneFlorida Clinical Research Consortium representing usual care for Floridians with cancer allow for longitudinal tracking of smoking status in cancer patients that is not captured by traditional surveillance methods. Leveraging existing OneFlorida data linkages with tumor registry, healthcare utilization and health outcomes could facilitate improved understanding of how effect modification from changes in smoking behavior could affect cancer treatment.

## 120

**HPV Vaccination Rates Among Childhood Cancer Survivors in South Texas**

**Shay LA**, Brennan A, Embry L, Grimes A

Purpose of the study: Compared to the U.S. general population, childhood cancer survivors (CCS) experience significantly higher rates of HPV-related malignancies, yet are not currently targeted in population-based HPV vaccine initiatives. This study aims to evaluate HPV vaccination rates among CCS in South Texas. Methods: Medical records of CCS at the South Texas Children's Cancer and Blood Disorders Center in San Antonio, Texas were retrospectively reviewed to identify all patients potentially eligible to receive the HPV vaccine (age 11-26 during 2006-2016). Of 210 cancer survivors, 156 were eligible. Review of vaccine records through Texas ImmTrac vaccine registry and electronic clinical records verified HPV vaccination status. Demographic and clinical variables collected included date of birth, gender, race/ethnicity, cancer diagnosis, and cancer treatment. Results: Among 156 vaccine-eligible patients, 21 (13.5%) received any vaccine with 9 (5.7%) completing the 3-dose series. Of the 84 females, 16 (19%) initiated and 9 (10.7%) completed the series. However among 72 males, only 5 (6.9%) initiated with no completions. The population of CCS treated in South Texas is largely Hispanic (76%). Among the 119 Hispanic CCS, only 17 (14%) initiated and 7 (6%) completed the series. Sixteen patients (10.3%) received radiation to risk areas for HPV-related disease: abdomen, pelvis, whole spine or whole body. However, only 2 (13%) of these initiated the series and none completed. Twelve (7.7%) CCS received prior stem cell transplant, but only 1 initiated and completed the series. Conclusions: HPV vaccination rates among pediatric survivors in South Texas are lower than demonstrated in the general population for Bexar county, Texas, and nationally. Given the increased susceptibility to second HPV-related cancers, particularly in those who received abdominal or pelvis radiation, SCT, or remain immunocompromised, this study demonstrates need for strengthened pediatric survivor HPV vaccination and identifies an at-risk gap population.

## 121-T

### Describing the Healthcare Experiences of Older Breast Cancer Survivors: Identifying Person-Level Factors Associated with Positive Care Experiences

**Siembida EJ**, Mollica MA, Kent EE, Smith AW

PURPOSE: Positive healthcare experiences are associated with important outcomes among older cancer survivors, including adherence to follow-up care guidelines. We sought to describe person-level factors associated with positive care experiences among older breast cancer survivors. METHODS: We used the Surveillance, Epidemiology, and End Results (SEER) and Consumer Assessment of Healthcare Providers and Systems (CAHPS®) population-based, linked data resource to examine three dimensions of perceived healthcare experience: CAHPS composites Getting Needed Care, Getting Care Quickly, and Doctor Communication. Associations between sociodemographic factors, cancer history (e.g. time since diagnosis), and health history (e.g. number of comorbid conditions), and CAHPS subscales were examined. Women (N=332) with Stage I-IV breast cancer diagnosed at 65 years or older were included, and generalized linear models were analyzed for each CAHPS composite, adjusting for CAHPS case-mix adjustment variables (e.g. self-reported mental and general health). RESULTS: Compared with survivors who had at least one comorbid condition, survivors without comorbid conditions were significantly more likely to report receiving care quickly ($\beta$=10.18 p < .001). Survivors were also more likely to report receiving care quickly as the number of months since diagnosis increased ($\beta$=0.20, p = .021). Survivors were less likely to report receiving needed care as their reported general health status increased ($\beta$=-3.57, p = .009). Finally, survivors with some college education or more (compared to high school education or less, $\beta$=-6.30, p = .001) and reported higher general health status ($\beta$=-2.51, p = .019) were more likely to report poorer communication with their doctor. CONCLUSIONS: Breast cancer survivors make up the highest proportion of older female cancer survivors. Understanding how to improve their care experiences is central to improving health outcomes among this population. Our results suggest that the characteristics of survivors experiencing poorer care differ within the three domains we examined, suggesting that a tailored approach to improving care delivery is necessary. Some of the potential targets for intervention identified include patients with higher comorbidity burden.

## 122

### Developing a Mobile Support Tool for Head and Neck Cancer Caregivers

**Sterba K**, Ruggiero K, Toll B, Armeson K, Stafford M, Scallion M, Day T

Purpose: Head and neck cancer (HNC) survivors face challenging treatments that can lead to disruptions in swallowing and result in malnutrition and feeding tube dependence. HNC caregivers therefore encounter distressing caregiving burdens and often feel unprepared to provide nutritional support. The purpose of this study was to develop a mobile support app (mSupport) for HNC caregivers after treatment. Methods: We characterized perspectives on nutritional recovery and mSupport intervention preferences in 1) HNC survivors and caregivers using key informant interviews and 2) oncology dietitians using a cross-sectional web-based survey. Interviews included survivors completing treatment within the past 24 months (N=15, 80% male, mean age=65) and their caregivers (N=13, 85% female, mean age=61) and content analysis was used to identify themes. Surveys were completed by oncology dietitians (N=116; 100% female, 50% in practice >10 years) to identify caregiving challenges and needed mSupport resources. Results: Survivors and caregivers highlighted primary nutritional caregiving concerns including: 1) survivor symptom management (e.g., swallowing, dry mouth/taste concerns, feeding tube management, weight maintenance) and 2) intense caregiver distress about nutrition. Dietitians perceived moderate to high levels of difficulty for caregivers to interpret changes in symptoms (80%), track intake (75%) and access nutritional resources (69%); 86% also highlighted common disagreement between survivors/caregivers about nutritional status. Participants were enthusiastic about a mobile app and emphasized the need for a simple, flexible, preference-driven design with three key components: an intake tracker, recipes and tips and support videos/messages from clinicians and peers. The majority preferred mSupport right after treatment with 2 prompts per week and the option to delay response when needed. Over 75% of dyads reported high comfort navigating questions on a smartphone or tablet and 100% were in agreement that the mSupport tool would help families practically and emotionally. Conclusions: Results pinpoint optimal content and timing for an mSupport app for HNC caregivers and demonstrate high interest in technology-supported interventions for caregivers after treatment.

## 123

### Excess heart age among young breast cancer survivors over two-year follow-up

Vo JB, Kenzik KM, Landier W, Raju D, Kirklin J, Meneses, K

Purpose: There are approximately 3.5 million breast cancer survivors (BCS) in the US. Approximately 10% are diagnosed "young" (<45 years). The overall 5-year survival rate for BCS is 90%. Living longer, BCS are at higher risk for developing cardiovascular disease (CVD) due to cancer treatment, such as anthracyclines and/or trastuzumab. The purpose of this study was to examine CVD risk, measured using excess heart age, among young BCS. Methods: This is a retrospective, 2-year cohort study using data from electronic medical records of BCS diagnosed between 30-44 years of age and treated at UAB Hospital between 2012-2015. Heart age was calculated using actual age, systolic blood pressure, antihypertensive medication use, body mass index, diabetes status, and smoking status. Excess heart age, the difference between heart age and actual age, was examined at 2 time points: diagnosis and 2-year follow-up. Within-group mean comparison tests and linear regression were conducted to compare excess heart age over two-year follow-up and identify predictors of excess heart age. Statistical analyses were conducted using R v3.2.2. Results: There were 152 young BCS, of which 95 received anthracyclines and/or trastuzumab (Group A/T) and 57 did not (Group No-A/T). Overall excess heart age was 4.2 to 5.4 years from diagnosis to 2-year follow-up (p = .08). There was no significant difference in excess heart age from diagnosis to follow-up in Group A/T (4.3 to 4.4 years, p = .93); whereas Group No-A/T had a significant increase (4.0 to 7.1 years, p < .01). Factors that increased excess heart age included hormonal therapy and change from premenopausal to postmenopausal status. Conclusions: Among young BCS treated with anthracyclines and/or trastuzumab, there was no significant increase in excess heart age at follow-up; however, subclinical changes, undetected by heart age, may still occur. Group No-A/T had a significant increase of 3.1 years, which may be related to hormonal therapy and change in menopause status. Hormone therapy is associated with weight gain, and early menopause may contribute to increased excess heart age. Future research is needed to evaluate CVD risk over longer follow-up and should consider incorporating cancer treatment risk factors into heart age.

## 124

### Trends in medical imaging use in children with central nervous system tumors

Bowles EJA, Pole JD, Furst A, Bartels U, Kwan ML, Cheng, SY, Marlow E, Greenlee R, Rahm A, Stout NK, Weinmann S, Bolch WE, Theis MK, Deosaransingh KA, Smith-Bindman R, Miglioretti DL

Purpose: We examined rates and types of medical imaging in children and adolescents diagnosed with central nervous system (CNS) tumors to understand imaging patterns during diagnosis and follow-up, and potential exposure to ionizing radiation. Methods: Our retrospective cohort study included children <21 years with an incident CNS tumor diagnosis (benign or malignant) recorded by regional tumor registries between 1996-2016 in 7 U.S. integrated health care systems. Children had to be enrolled in their health plan for >6 months before and after diagnosis and were followed for 10 years or until death, 6 months before a second cancer, plan disenrollment, age 21, or study end (12/31/2016). We used billing and diagnosis codes to capture imaging exams 1 year before and up to 10 years after diagnosis. We calculated imaging rates per child per month (PCPM) by exam type (computed tomography [CT], magnetic resonance imaging [MRI], nuclear medicine, ultrasound, angiography/fluoroscopy, and radiography), age at diagnosis, years of diagnosis, and tumor grade. Results: Among 727 children with CNS tumors, the median age at diagnosis was 11 years and 21% were diagnosed with malignant, high grade (III/IV) tumors. Imaging rates started to increase in the month before diagnosis and peaked in the month of diagnosis, with MRI exams being the most common (1.9 exams PCPM), followed by radiography (1.4 exams PCPM) and CT (1.0 exams PCPM). MRI use at diagnosis increased over time and was highest for cases diagnosed between 2010-2016 (2.1 exams PCPM), whereas CT rates were highest for cases diagnosed between 2003-2009 (1.1 exams PCPM) after which they declined. Radiography, MRI, and CT imaging rates were highest at diagnosis in children age ≤3 (2.8, 2.2, and 1.3 PCPM, respectively) and in children with malignant, high grade tumors (3.2, 2.8, and 1.8 PCPM, respectively). In the first year after diagnosis, MRI rates peaked at 3, 6, and 9 months and were the most common exam throughout 10 years of follow-up, and among younger age groups and children with malignant, high grade tumors. Conclusions: Imaging use is frequent in children with CNS tumors and has increased over time. MRI, which does not use ionizing radiation, is the most common type of imaging used in children with CNS tumors.

*- T Denotes Trainee*

## 125-T

### Quality of Life, Patient Satisfaction, and Psychological Distress in Women with Hormone Receptor Positive (HR) Breast Cancer

**Kaur A**, Taylor TR, Hurtado de Mendoza A, Sheppard VB

This study examined the impact of patient satisfaction on quality of life in women with hormone receptor positive breast cancer. Furthermore, psychological distress was examined as a mediator of the relationship between patient satisfaction and quality of Life. Methods: Six hundred women with HR+ breast cancer receiving adjuvant hormonal therapy completed baseline measures, including the Functional Assessment of Cancer Therapy-Breast (FACT-B), National Comprehensive Cancer Network (NCCN) Distress Thermometer, Patient Satisfaction Questionnaire – 18 (PSQ-18) and background measures of socio-demographic, lifestyle and medical characteristics. Subjects were recruited from Georgetown University, Kaiser Permanente -Atlanta, and Henry Ford Health System - Detroit, MI. Eligible participants were women with hormone receptor positive invasive breast, > 21 years of age, non-metastatic cancer, were fluent in English, and initiated adjuvant hormonal therapy within 12 months of their diagnosis. Results: Patient satisfaction was positively correlated with total Quality of Life and all FACT-B subscales (physical well-being, social well-being, emotional well-being, functional well-being, and an additional Breast Cancer Subscale) (r=1.8-4.1, p<.05). A regression-based approach to mediation analysis was conducted using PROCESS to determine if distress mediates the predictive effect of patient satisfaction on quality of life. The standardized regression coefficient between patient satisfaction and distress was statistically significant, as was the standardized regression coefficient between patient satisfaction and QoL. The indirect effect was (-.0543)(-1.823) = .099. The significance of this indirect effect was tested using bootstrapping procedures. The bootstrapped unstandardized indirect effect was .099, and the 95% confidence interval ranged from .043, .169. Thus, the indirect effect was statistically significant. Conclusions: Results support the positive relationship between patient satisfaction and psychosocial outcomes (QoL), as well as how distress can mediate this relationship. This highlights the need for physician-based interventions that improve the manner in which treatment is communicated and delivered to breast cancer patients.

## 126

### A mobile health (mHealth) intervention for promoting physical activity and decreasing sedentary time among adolescent and young adult (AYA) cancer survivors: A Pilot RCT

**Mendoza JA**, Syrjala KL, Haviland MJ, Abbey-Lambertz M, Chow EJ, Baker KS

Purpose. Effective physical activity (PA) interventions for AYA cancer survivors are sparse, but necessary to prevent chronic disease and improve quality of life. We conducted a pilot randomized controlled trial (RCT) to test the feasibility of a mHealth intervention to promote PA among AYA survivors. Methods. We recruited survivors aged 18-39 years, who were ≥1 and <5 years post-cancer therapy, from the Seattle Cancer Care Alliance. The 12-week intervention consisted of a wearable PA-tracking device (Fitbit Flex), a private, invitation-only Facebook group, weekly goal setting activities with research staff based on step counts, and a "buddy" (friend or relative) who received a Fitbit to provide encouragement to the participant. Research staff awarded step count badges and moderated PA-discussions on the Facebook group weekly. Controls received the Fitbit only. Baseline assessments occurred before randomization and follow-up assessments occurred during weeks 10-12 of the intervention period. Feasibility criteria were identified prior to the RCT and defined below. Exploratory analyses examined changes in accelerometer-measured PA between baseline and follow-up, adjusting for enrollment wave, accelerometer wear time, race/ethnicity, and income. We categorized Facebook group engagement according to the number of views, likes, comments, and posts. Results. All feasibility criteria were met: 50 AYA survivors were recruited, intervention participants wore the Fitbit the majority (82.9%) of intervention days, and >75% of participants completed questionnaires. There was a significant reduction from baseline to follow up in mean sedentary time (59.7 minute/day; p<0.001) in the intervention compared to the control group. Participants in the intervention group who were very engaged on the Facebook group had an average of 142.7 [95% CI: 101.6, 387.0] fewer minutes/day of sedentary time compared to those who were not engaged. There was no difference in the mean change from baseline to follow-up in moderate-to-vigorous PA (p=0.32) or light PA (p=0.18) between the treatment groups. Conclusions. This mHealth PA intervention was feasible among AYA cancer survivors and resulted in significant decreases in sedentary time. Findings require confirmation in a fully powered RCT.

## 127-T

### Caregiving Responsibilities, Social Support, and Well-Being in Family Caregivers of Patients with Brain Metastases

Otto AK, Ketcher DE, Reblin M

Purpose of the study: Relatively little work has explored caregiving responsibilities, social support, and well-being in family caregivers (FCGs) of patients with brain metastases; this study aimed to help fill this gap in the literature. Methods: Data were drawn from a larger pilot study. Participants were 21 FCGs of patients with brain metastases. FCGs completed the Zarit Caregiver Burden-12, Coping Self-Efficacy, Connor-Davidson Resilience Scale, Hospital Anxiety and Depression Scale, a modified version of the Duke-UNC Functional Social Support Questionnaire (FSSQ), and Duke Social Support and Stress Scale (DUSOCS). Results: On average, FCGs were 60.5 years old (SD=9.6), female (57.1%), White (95.2%), non-Hispanic (85.7%). Most FCGs were the patient's spouse (85.7%), had a college degree (57.1%) and annual household income of ≥$75,000 (57.1%), and were not working (61.9%). Most (47.6%) reported caregiving 7-20 hours/week; 23.8% reported more. On average, FCGs helped with 5.8 (SD=3.3) activities of daily living, most commonly housework (76.2%) and meal preparation (76.2%). FCGs reported subclinical anxiety (M=7.5, SD=3.3) and elevated depression (M=9.1, SD=1.6). They perceived moderate social support (FSSQ M=4.6, SD=1.0, range=1-6; DUSOCS Support M=49.1, SD=20.3) and low social stress (DUSOCS Stress M=16.0, SD=14.4). FCGs reported mild-to-moderate burden (M=10.4, SD=6.4), and moderate preparedness for caregiving (M=2.5, SD=0.7). They also reported relatively high coping self-efficacy (M=89.7, SD=25.9) and resilience (M=75.6, SD=14.5). Income was negatively associated with depression (r=-.47, p<.05). Burden was positively correlated with time caregiving (r=.59, p<.01), anxiety (r=.54, p<.05) and depression (r=.59, p<.01), and negatively correlated with FSSQ (r=-.57, p<.01). FSSQ was negatively related to anxiety (r=-.63, p<.01) and depression (r=-.46, p<.05) and positively correlated with coping self-efficacy (r=.66, p<.01). Conclusions: Though FCGs reported mitigating factors like resilience, they still experienced significant distress. Low/moderate levels of social support and social stress may reflect social isolation. Findings support previous work suggesting that neuro-oncology caregiving is burdensome, with adverse effects on health and well-being.

## 128

### A Mindfulness-Based Intervention for Caregivers of Hematopoietic Stem Cell Transplant Patients: Pilot Results

Vinci C, Malkhasyan L, Lau P, Schmidt J, Jim H, Pidala J

Purpose: Despite experiencing high levels of stress as caregivers of HCT cancer patients, there are almost no empirically-supported interventions for this population to aid in stress management. This study examined various stress-related outcomes following a pilot, single-arm trial of a 6-week mindfulness-based intervention (MBI) for stress management. Prior to implementation, this MBI was developed via input from former caregivers (qualitative interviews), other MBI programs, and ultimately by an intervention mapping approach to tailor the program to this specific population. Method: Following informed consent, participants completed up to 6 individual treatment sessions that focused on developing mindfulness skills via meditation and informal mindfulness practices. The first 3 sessions took place on the inpatient unit while their patient was receiving the transplant; the last 3 sessions took place via a video conference app post-discharge. Participants completed questionnaires at baseline, end of treatment, and one-month post-treatment in these areas: mindfulness, stress and affect, coping and isolation, and quality of life. Results: Participants (N=19 who attended at least one session) were 79% female with an average age of 58.43 (SD=15.49). Here, data are presented for those who completed at least 65% of sessions (N=15). Results indicated that at end of treatment, participants reported significantly higher mindfulness (according to both the Mindfulness Attention Awareness Scale and the Five Facet Mindfulness Questionnaire nonjudging subscale), lower negative affect (via the Positive and Negative Affect Schedule), greater post traumatic growth (Post Traumatic Growth Inventory), and overall better mental health (Global Health Scale) when compared to baseline. No significant differences emerged from end of treatment to follow-up, suggesting the treatment gains were maintained. Discussion: Findings provide preliminary support that a MBI for HCT cancer caregivers is associated with increased mindfulness, post traumatic growth, mental health, and lower negative affect. Limitations include the small sample size and lack of a comparison condition. Nonetheless, these data support future research examining the efficacy of this MBI for HCT cancer caregivers.

*- T Denotes Trainee*

## 129-T

### Association between bone resorption biomarkers and body fat percent in overweight and obese breast cancer survivors

**Zapanta KRM**, Lee K, Sami N, Dieli-Conwright CM

INTRODUCTION: Obesity-induced reductions in osteocalcin and bone-specific alkaline phosphatase (BSAP) are associated with bone resorption and degradation. Therefore, obese individuals with high body fat percentage may experience reductions in bone mineral density (BMD) and increased risk of fracture. Breast cancer survivors often experience increases in body fat percentage as a result of cancer-related treatments, and hence may be more susceptible to adverse changes in bone resorption than non-cancer populations. PURPOSE: The purpose of this study was to determine whether body fat percent was associated with the biomarkers of bone resorption, osteocalcin, and BSAP, in overweight and obese breast cancer survivors. METHODS: One hundred sedentary, overweight or obese breast cancer survivors (BMI ≥ 25 kg/m2; Stages I-III) were included in this study. Body fat percent was obtained from a whole-body scan using the Dual Energy X-Ray Absorptiometry (DEXA; Lunar GE iDXA, Fairfield, Connecticut). Osteocalcin and BSAP were measured using enzyme-linked immunosorbent assays from fasting blood samples. Pearson's correlations were used to assess the association between body fat percent and the two bone biomarkers. RESULTS: On average, the women were 53.5±10.4 years old, postmenopausal (60%), Hispanic (55%) with a BMI of 33.5±5.5 kg/m2. Mean values for body fat percent and biomarkers of bone resorption were as follows: body fat percent 36.9%±4.9, osteocalcin 12.2±3.25 ng/ml, and BSAP 16.15±4.5 ng/ml. There were strong correlations between body fat percent and osteocalcin (r=0.723; p<0.001) and between body fat percent and BSAP (r=0.819; p<0.001). CONCLUSION: Body fat percent was associated with biomarkers of bone resorption in overweight and obese breast cancer survivors. Therefore, high body fat percent may further contribute to poor bone health caused by cancer-related treatments. Targeting body fat with lifestyle interventions may be of vital importance to consider during cancer survivorship, in order to improve bone health among overweight and obese BCS.

## 130-T

### Alcohol consumption and all-cause mortality for women diagnosed with breast cancer in the prospective family study cohort (ProF-SC)

Zeinomar N, Liao Y, Kehm RD, Phillips KA, MacInnis RJ, Dite GS, Daly MB, John EM, Andrulis IL, Buys SS, Hopper JL, Terry MB

Purpose: To examine the association of pre-diagnostic alcohol consumption with all-cause mortality after breast cancer (BC) diagnosis using data from the Prospective Family Study Cohort (ProF-SC). Methods: We studied 4,575 women diagnosed with a first primary BC and enrolled in ProF-SC within 2 years after diagnosis. We evaluated the association between pre-diagnostic alcohol consumption and all-cause mortality using multivariable Cox Proportional Hazard models, adjusting for age at BC diagnosis, study site, race/ethnicity, education, BMI, age at first pregnancy, parity, breastfeeding, oral contraceptive use, hormone therapy use, menopausal status, estrogen receptor status, tumor stage, and cigarette smoking. We defined alcohol consumption as the average number of total alcoholic drinks per week, categorized as < 7 and ≥ 7 drinks/week. We defined one drink as a 12 oz. serving of beer, one medium glass of wine, or one shot of liquor. We assessed multiplicative interaction by absolute predicted 1-year BC familial risk estimated from pedigree models. Results: During 53,759 person years of follow-up (median: 12.5, maximum: 21.7 years), we observed 1140 deaths in women with an average age of first BC diagnosis of 47.8 years. Overall, compared with non- regular drinkers we did not find any association between alcohol consumption and all-cause mortality. When stratified by age at BC diagnosis, we found a 27% increased mortality risk associated with regular alcohol consumption (≥ 7 drinks per week) for women aged < 50 years at diagnosis (Hazard Ratio (HR) 1.27, 95% CI: 1.01, 1.61), but no association for older women. Predicted 1-year BC familial risk modified the association between regular alcohol consumption (≥ 7 drinks per week) and overall mortality (p- interaction: 0.04), such that women at the 95th percentile of absolute predicted 1-year BC familial risk had a 59% increased risk (HR: 1.59, 95% CI: 1.13, 2.23), while women at 5th percentile were not at increased risk (HR: 1.04, 95% CI: 0.94, 1.35). Conclusions: Pre-diagnostic alcohol consumption is not associated with all-cause mortality for women overall although there might be an association for women diagnosed before age 50 and for women with a higher absolute BC familial risk who regularly consume alcohol.

# Amendments to ASPO Governance Documents

Thank you to those who exercised your membership rights this past fall and participated in voting on the proposed amendments to ASPO's Constitution and Bylaws; these changes were overwhelmingly approved. We subsequently have found an inadvertent error in the placement of the Cancer Prevention and Control Associate Director/Program Leader workshop, which should have been listed as a Standing Committee and not a Special Interest Group. We want to correct this error as well as take this opportunity to further clarify the ex officio membership of ASPO's governing body. The proposed changes are noted below. We will have a vote on these amendments during the annual Business Meeting on Monday, March 11, 2019 (4:30-5:30 p.m).

<div align="center">

(Constitution)
**Article IV: Governing Body**

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## Section 1

The Governing Body shall be an Executive Committee consisting of a President, President-Elect, Secretary-Treasurer, and three (3) elected Directors. Ex officio (non-voting) members of the Executive Committee shall include the Past-President, current Program Chair(s), current Chair of the Cancer Prevention and Control Associate Director/Program Leader workshop, current organizer of the New Investigator workshop, and the Principal Investigator of the R13 Conference Award (if such funding support exists). The terms of the Executive Committee are defined in the Bylaws.

<div align="center">

(Bylaws)
**Article VII: Standing Committees**

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## Section 2. Other Committees or Taskforces

Ad hoc taskforces or committees may be appointed by the President as the need arises with the expected duration of service to be determined at the time of formation. The approval of the Executive Committee shall be required for the formation of additional committees or taskforces. Committees or taskforces may address, but be not limited to, the following areas:

- Webinars
- Career development
- Financial and sustainability
- Communications and external relations
- Cancer Prevention and Control Associate Director/Program Leader workshop

## Section 3. Special Interest Groups

Recognizing the multi-disciplinary and evolving nature of preventive oncology, Special Interest Groups will reflect the state of the art and science of the field and the interests of the membership. Approval by the Executive Committee shall be required for the formation of new Special Interest Groups. Special Interest Groups may include, but are not limited to the following areas:

- Behavioral Science and Health Communication
- Molecular Epidemiology & the Environment
- Lifestyle Behaviors, Energy Balance & Chemoprevention
- Survivorship and Health Outcomes/Comparative Effectiveness Research
- Cancer Disparities
- Early Detection and Risk Prediction of Cancer
- Early Career Development
- Global Cancer Research

The Special Interest Groups will function to:
  a) make recommendations to the Program Committee
  b) maintain liaison with professional peers and other organizations
  c) identify problems which may lead to action or study programs
  d) educate the  membership regarding significant developments in their area of cognizance which are relevant to the purposes of the Society. An interactive relationship among the Special Interest Groups will be maintained.

These Special Interest Groups may seek funds for the implementation of programs in the name of the Society, after approval by the Executive Committee.

Special Interest Groups have a chair and a vice-chair and an unlimited membership. The chair and vice-chair of the Special Interest Groups are responsible for the activities of the group and are accountable to the ASPO Executive Committee. The vice-chair will assume the position of chair after the 2-year term of the chair is ended and a new vice-chair will be named by the SIG.

Dartmouth's

Norris Cotton  Cancer Center

and the

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at Dartmouth

are proud tocongratulate

James Sargent, MD

for his receipt of the

Joseph W. Cullen

Memorial Award .

## JAMES D. SARGENT, MD

- Scott M. and Lisa G. Stuart
  Professor of Pediatrics and of
  Biomedical Data Sciences
  Geisel School of Medicine at Dartmouth

- Director of the Cancer Population
  Sciences (CPS) Research Program
  Dartmouth-Hitchcock Norris Cotton
  Cancer Center

- Director of the C. Everett Koop
  Institute at Dartmouth
  Dartmouth College

## 2018 JOSEPH W. CULLEN MEMORIAL AWARD FOR EXCELLENCE IN TOBACCO RESEARCH

Dr. Sargent has spent more than twenty years studying the impact of mass media on cancer risk behaviors in childhood and adolescence, with a focus on tobacco, alcohol, and ultra-processed foods. When he first began to assess smoking in movies and its relationship with adolescent behavior in 1997, there was virtually no literature in the area of media substance use exposure and its relation to behavior. Dr. Sargent led a team that developed a method to measure these exposures and was surprised at the strength and independence of the association with behavior. These findings of an independent association between movie smoking and movie alcohol and their respective behaviors in adolescents has been replicated over and over in prospective studies of adolescents across the world. The research is the basis for the Surgeon General's causal statement on smoking in movies and youth smoking.

Dr. Sargent is the Director of Norris Cotton Cancer Center's Cancer Population Science Program, which brings together scientists whose research focuses on environmental and genetic cancer risk factor epidemiology, behavioral cancer risk reduction and health care delivery research. He is also Co-Director for Geospatial Analytic Resource in the Biostatistics and Bioinformatics Shared Resource. Finally, he is the Director of the C. Everett Koop Institute at Dartmouth, whose mission is to advance health and well-being through research, education, and policy efforts to protect the public health and prevent disease. The Institute seeks to mitigate threats posed by the unhealthy promotion and use of consumer products, including tobacco, alcohol, and highly processed foods, as well as prescription drugs.

**Dartmouth-Hitchcock**
**NORRIS COTTON**
**CANCER CENTER**

One Medical Center Drive, Lebanon, NH 03756    Tel  603.650.4344

WWW.CANCER.DARTMOUTH.EDU

## ASPO
*American Society of Preventive Oncology*

Congratulations to

**Anna R. Giuliano, PhD**
Moffitt Cancer Center and Research Institute

Recipient of the ASPO 2019
Joseph F. Fraumeni, Jr., Distinguished
Achievement Award

Anna Giuliano has devoted her career to the understanding and prevention of HPV infections and their related cancers in men. She contributed heavily to HPV vaccine trials across all stages, from proof-of-concept to licensure. Her passionate and committed work on the International HPV Vaccine Trial in Men, combined with results from her landmark, multinational HPV Infection in Men (HIM) Study that provided the first description of the natural history of HPV in men, led to the initial licensure of the HPV vaccine for males ages 9-26 years in the US as well as in approximately 90 other countries. Most recently, evidence arising from Dr. Giuliano's Mid-Adult Male Vaccine Trial coupled with findings from the HIM Study resulted in the FDA expanded licensure of the vaccine to age 45.

Locally, Dr. Giuliano is actively involved in developing and providing physician education related to HPV vaccination efficacy and safety. She was a member of the Florida Cancer Control and Research Advisory Board, during which time HPV vaccination and HPV-related cancer incidence reduction goals were first introduced into the state cancer plan. Dr. Giuliano also is an active leader in national and worldwide campaigns for gender neutral HPV vaccination. She has participated in pivotal meetings at the World Health Organization regarding HPV vaccine research and recommendations that led to a substantial change in their HPV vaccine programmatic recommendations for low and middle income countries, all with the goal of accelerating the elimination of oncogenic HPV infections and the cancers they cause.

The global impact of her work is undeniable.



**MOFFITT**
CANCER CENTER
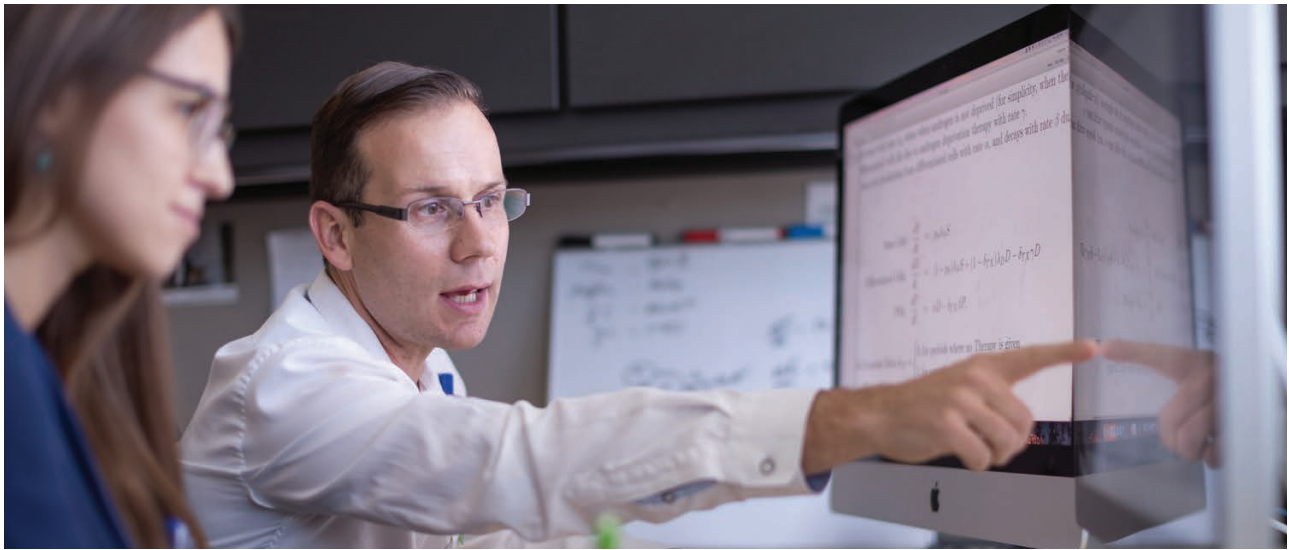
# Be part of our courageous mission.

There's never been a more exciting time to be involved in cancer research. At Moffitt, our research focuses on cutting-edge discoveries that can be rapidly translated into improved diagnostic, preventive and therapeutic advances. Join a team of over 6,000 who are devoted to the highest level of research and patient care.

## Incredible research opportunities for postdoc s

Postdoctoral researchers at Moffitt work under the guidance of outstanding and internationally recognized faculty mentors. Our goal is to nurture the next generation of gifted and competitive cancer researchers.

Learn more about postdoctoral training in Cancer Epidemiology and Health Outcomes and Behavior at Moffitt's exhibitor table or by visiting Moffitt.org/postdocs

Moffitt Cancer Center is the only NCI-designated cancer center in Florida. Our mission is to contribute to the prevention and cure of cancer. Our vision is to transform cancer care through service, science and partnership.

**MOFFITT** CANCER CENTER

# T32 Postdoctoral Training Program Request for Applications

The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC – James) is pleased to announce the availability of postdoctoral positions in our Cancer Prevention and Control Research T32 Training Program which focuses on cancer prevention, ranging from cancer risk and epidemiology (including tobacco) to health outcomes. The program covers the full spectrum of cancer control and includes an important focus on health disparities. The training program is intended to contribute to the pipeline of young cancer control and prevention researchers who will become independent scientists.

The OSUCCC – James, located in Columbus, is one of 49 National Cancer Institute (NCI)-designated comprehensive cancer centers. Both the OSUCCC and the Cancer Control Program earned the NCI's highest ranking of "exceptional" during the last two CCC-designation grant cycles. The program includes 60 members located among eight colleges within The Ohio State University, and has program funding that totals $11 million per year (66 percent from the NCI), which includes P50, P01, U01, U10 and T32 grants.

## Qualifications

• A MD, DO, DVM, DDS and or PhD degree; including MDs who completed clinical training, or are in clinical training and aspire to be physician-scientists.

The Ohio State University is an equal opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation or identity, national origin, disability status or protected veteran status.

Interested candidate should send copy of current CV and cover letter by email to:

Peter G. Shields, MD
Deputy Director, The Ohio State University Comprehensive Cancer Center Professor, College of Medicine, The Ohio State University
460 W. 10th Ave., 9th Floor, Suite D920
Columbus, OH 43210-1240

614-688-6563
peter.shields@osumc.edu

**NCI**
Designated
Comprehensive
Cancer Center

The James

THE OHIO STATE UNIVERSITY
COMPREHENSIVE CANCER CENTER

James_ASPO ad_7.6x10.indd   1

# The James

**THE OHIO STATE UNIVERSITY**
COMPREHENSIVE CANCER CENTER

Ohio State's Comprehensive Cancer Center – James Cancer Hospital and Solove Research Institute (OSUCCC – James) is recruiting outstanding faculty candidates with focused research in any area across the cancer control continuum, a track record of NIH funding, and commitment to cancer research in the areas of Epidemiology, Health Disparities and Health Outcomes. For candidates at the assistant professor rank, evidence of the beginning of a research trajectory, potential for external funding and some teaching experience are desirable. Appointment at the rank of associate professor or professor requires a strong record of research, external funding, publications, teaching and service.

About the OSUCCC – James
The 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 50 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 sponsored 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 344-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.

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)

# State of the Science National Firefighter Cancer Symposium

A public scientific conference that brings together academia, government, labor/management, and firefighters to support the reduction of cancer risk in the U.S. Fire Service.

## JUNE
## 10-11
2019

DONNA E. SHALALA STUDENT CENTER
1330 MILLER DRIVE
MIAMI, FL 33146

For more information visit: 2019FirefighterCancerSymposium.com

FIREFIGHTER
CANCER
INITIATIVE

SYLVESTER
COMPREHENSIVE CANCER CENTER
UNIVERSITY OF MIAMI HEALTH SYSTEM

UNIVERSITY OF MIAMI
MILLER SCHOOL
of MEDICINE

The **Medical College of Wisconsin** (MCW) invites applications from population health, behavioral science and community engaged researchers. Positions are available at all ranks with a track record of publications and independent funding commensurate with rank. Leadership opportunities include Program Leader for the Population Health Research Program and Associate Director of Community Outreach and Engagement. Successful recruits are expected to conduct an active program of independent and collaborative research pertinent to the mission of MCW Cancer Center and having a significant impact on cancer outcomes.

**Qualifications:** Candidates must have a PhD, MD, or MD/PhD or equivalent degree with a training focus on the behavioral sciences, public health, health communications or epidemiology. Preference will be given to applicants with a track record of extramural funding. Those with interest and expertise in health disparities research and community-based interventions are particularly encouraged to apply. Particular areas of interest include cancer epidemiology, tobacco, obesity, HPV and health services research.

**Background:** Cancer is the top strategic priority at MCW, with significant investment being directed at building our population health research program. The Cancer Center is comprised of more than 200 cancer research scientists and physicians at MCW, Froedtert Hospital, Children's Hospital of Wisconsin, Center for International Bone Marrow Transplant Research, Clement Zablocki VA Medical Center, and the BloodCenter of Wisconsin, and has an ambitious plan for growth, including achieving NCI-designation. The population health research program has a robust foundation with strong extramural funding, dedicated administrative support, an extensive network of community partnerships.

If interested, please send your CV and letter of interest to Dr. Melinda Stolley, Associate Director of Cancer Prevention and Control, mstolley@mcw.edu. Questions may also be directed to Dr. Stolley

# RUTGERS
## Cancer Institute of New Jersey

## Open Rank, Tenure-Track Faculty Position Available
### Cancer Disparities and Health Equity

Rutgers Cancer Institute of New Jersey, a National Cancer Institute (NCI) Designated Comprehensive Cancer Center and the School of Public Health seek a cancer disparities and health equity researcher with a productive and transformative research agenda to eliminate disparities and promote health equity in cancer prevention and control in New Jersey. We seek candidates with expertise in community intervention trials, dissemination and implementation science, and/or cancer care delivery research in underserved populations in which cancer disparities exist. 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 School of Public Health with a resident faculty appointment at the Cancer Institute of New Jersey. The successful candidate will: have NIH-funded, cancer focused research or very strong potential for such funding; have a sustained focus on underserved and vulnerable populations in New Jersey; be motivated to contribute to a vibrant and collaborative environment of scholars from the basic, clinical and populations sciences; engage in cancer disparities research mentoring and training; be dedicated to mentoring students and junior faculty. Preference for candidates with a deep understanding of and commitment to advancing health equity for low-income, underserved minority, and medically underserved communities, including communities of color, rural communities, and/or neighborhoods or regions that face issues of inequity. The selected individual will also be inspired to capitalize on opportunities for transdisciplinary collaborations within the Rutgers Cancer Institute of New Jersey, the School of Public Health, the Institute for Health, Health Care Policy and Aging Research, Robert Wood Johnson Medical School and other schools/colleges across campus, Rutgers RWJBarnabas Health System, Rutgers Cancer Institute at Newark University Hospital, Princeton University, ScreenNJ Program, Precision Oncology Program, the evolving Centers for Cancer Health Disparities Research and Cancer Survivorship, 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) Biometrics, 2) Population Research Support, 3) Genomics; 4) Biomedical Informatics; 5) Biospecimen Repository and Histopathology Service; and 6) Metabolomics.

Applicants are expected to have: 1) a doctoral degree in public health or closely related health disciplines such as psychology, sociology, or health policy: 2) postdoctoral training or experiences in community intervention research and/or dissemination/implementation science, and/or cancer care delivery research; 3) experience in cancer disparities and health equity research involving engagement with members of diverse and underserved communities; 4) evidence of research productivity, including high quality publications and peer-reviewed funding or the potential to obtain such funding; 5) demonstrated experience to working in a diverse environment or commitment to do so; and 6) experience (or motivation if early career researcher) in mentoring faculty and students. Preference will be given to candidates with peer-reviewed funding and have engaged in successful multidisciplinary cancer disparities research. 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 to Anita Y. Kinney, PhD, RN, FAAN Professor, Department of Epidemiology & Director, Center for Cancer Health Disparities School of Public Health, Associate Director for Cancer Health Equity and Engagement Cancer Institute of New Jersey.

To apply, please visit http://jobs.rutgers.edu/postings/83346

# University of New Mexico Comprehensive Cancer Center

## Health Services/Behavioral Interventionalist

### Two Positions: Associate/Full Professor • Assistant Professor

Seeking established population scientists and early career population scientists focused on research in cancer control, cancer health services research, and behavioral intervention to expand programmatic efforts in cancer control in New Mexico. Join our Cancer Control research program whose members conduct cancer-focused research spanning the cancer continuum and work collaboratively across multiple disciplines to advance innovative research to improve the delivery of cancer-related care and optimize health outcomes. *Search chairs: Linda Cook and Larissa Myaskovsky.*

**For details and to apply, visit cancer.unm.edu/ JoinTheBest**

**Questions? Contact Search Coordinator Amanda Leigh at ALeigh@salud.unm.edu, (505) 272-2201.**

The University of New Mexico Comprehensive Cancer Center (UNMCCC) is the Official Cancer Center of New Mexico and the only National Cancer Institute (NCI) designated comprehensive cancer center in a 500-mile radius. Our 134 oncology physicians, 122 cancer research scientists, and staff focus on discovering the causes and cures for cancers disproportionately affecting the people of the American Southwest — primarily Hispanic, American Indian, and Non-Hispanic White — with strikingly different patterns of cancer incidence, mortality and disparity. In the past year, our center cared for 12,000 patients; 12 percent participated in therapeutic interventional studies and 35 percent in interventional studies. UNMCCC has outstanding programs in Cancer Control and Cancer Health Disparities; Cancer Genetics, Epigenetics, and Genomics; Cancer Cell and Systems Biology; and Cancer Therapeutics. Our research houses national centers: The Molecular Discovery and High Throughput Target Screening Center (nmmlsc.health.unm.edu), one of six Chemical Biology Consortium Centers of Excellence in The NCI NExT Program; Spatiotemporal Modeling of Cell Signaling (stmc.unm.edu), one of 13 NIH National Centers for Systems Biology; and a NIH Clinical and Translational Sciences Center. Visit cancer.unm.edu.

Photo: Bill Tondreau, "River Edge", panoramic photographic, courtesy of sumnerdene.com

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# University of New Mexico Comprehensive Cancer Center

## Cancer Molecular & Genetic Epidemiology Position

### Two Positions: Associate/Full Professor • Assistant Professor

Seeking scientists with expertise in cancer population sciences and molecular genetic and/or epigenetic epidemiology, particularly as it used to assess and impact cancer health disparities, gene-environment interactions, and genetic ancestry and genetic risk assessment in complex multi-ethnic populations. *Search chairs: Marianne Berwick (MBerwick@salud.unm.edu) and Linda Cook (lcook@salud.unm.edu).*

**For details and to apply, visit cancer.unm.edu/ JoinTheBest**

**Questions? Contact Search Coordinator Amanda Leigh at ALeigh@salud.unm.edu, (505) 272-2201.**

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Photo: Bill Tondreau, "River Edge", panoramic photographic, courtesy of sumnerdene.com

# University of New Mexico Comprehensive Cancer Center

## Associate Director of Population Sciences & Cancer Control

**The UNM Comprehensive Cancer Center is searching for a distinguished national leader in cancer population sciences.**

Seeking candidates with a sustained track record of outstanding scholarly achievement reflected in peer-reviewed funding (preferably NCI and NIH), high quality publications, and collaborative interdisciplinary research with a scientific focus in either cancer epidemiology, cancer prevention and control, health services research, behavioral intervention, or cancer health disparities. A distinguishing characteristic of the UNMCCC is the multiethnic, multicultural, rural, and underserved populations it serves in its catchment area - primarily Hispanic/Latino, American Indian, and non-Hispanic White - with strikingly different patterns of cancer incidence, mortality, and disparity. This position will lead the UNMCCC mission in cancer population sciences by focusing on those cancers with high incidence and disparity in the New Mexico catchment area and translating discoveries to community interventions. Candidates must

have interest and expertise in working with underserved and minority populations; strong leadership, organizational, interpersonal, and communication skills; and the ability to develop and lead successful interdisciplinary collaborations. Holding the Carolyn R. Surface Endowed Chair in Cancer Population Sciences and joining the UNMCCC Senior Leadership Team and Executive Committee, the successful Associate Director will oversee the highly collaborative and vibrant Cancer Control & Cancer Disparities Research Program and facilitate its collaborations with other UNMCCC Research Programs and institutions; the Behavioral Measurement and Population Science Shared Resource; and the faculty and staff of the Office of Health Equity and Community Partnerships. **Search Chairs:** *Marianne Berwick and Chuck Wiggins.*

**Endowed Chairs and Professorships, significant resources, leadership roles, and comprehensive start-up packages available.**

## For details and to apply, visit cancer.unm.edu/JoinTheBest

Questions? Contact Search Coordinator Amanda Leigh at ALeigh@salud.unm.edu, (505) 272-2201.

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UNM is an Equal Opportunity/Affirmative Action Employer and Educator

# One goal:

cancer®

At MD Anderson Cancer Center, we believe that the first and best way to end cancer is to reduce the risk of getting it.

That's why 40 years ago we made a commitment to cancer prevention, and 25 years ago we established the Division of Cancer Prevention and Population Sciences.

All of us at MD Anderson extend our deepest gratitude to our faculty and staff dedicated to advancing the field of cancer prevention.

We also offer our heartfelt congratulations to those taking on new leadership roles within MD Anderson's Division of Cancer Prevention and Population Sciences and the American Society of Preventive Oncology (ASPO).

*Together, we can end cancer.*

THE UNIVERSITY OF TEXAS

MD Anderson
Cancer Center

Making Cancer History®

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

**Shine Chang, Ph.D.**
Professor, Epidemiology
MD Anderson Cancer Center
ASPO Director At-Large

**Paul Scheet, Ph.D.**
Chair, Epidemiology
MD Anderson Cancer Center

**Sanjay Shete, Ph.D.**
Deputy Division Head
Division of Cancer Prevention
and Population Sciences
MD Anderson Cancer Center

# Associate Director for Cancer Population Sciences

Penn State Cancer Institute, The Pennsylvania State University
Hershey, PA
Tenure Track Faculty position

The Penn State Cancer Institute (PSCI) and the Department of Public Health Sciences of The Pennsylvania State University are seeking a national leader in cancer population sciences to serve as the Associate Director for Cancer Population Science for the PSCI. We are seeking a leader that will integrate relevant multidisciplinary/transdisciplinary expertise in a variety of PSCI research programs at multiple campuses into an innovative, coordinated cancer control research program. This leader will participate in key decision making committees related to resource allocation, strategy, recruitment, and institutional initiatives related to cancer research. Responsibilities include: growing the NCI-funded research portfolio, expanding community engagement in cancer control, and partnering with the Clinical and Translational Science Institute and the Institute for Personalized Medicine of The Pennsylvania State University.

We seek applicants with a sustained track record of outstanding scholarly achievement reflected in peer-reviewed funding (preferably NCI and NIH), high quality publications, and collaborative interdisciplinary research.

Candidates must have doctoral-level training in a biomedical data science, cancer epidemiology or prevention and control research and/or a medical degree with complementary post-doctoral training. Experience in an NCI-designated cancer center is desirable. Additional qualifications include strong interpersonal and written/verbal communication skills, mentorship ability and administrative experience.

Salary level, total compensation, and start-up package for this position will be highly competitive.

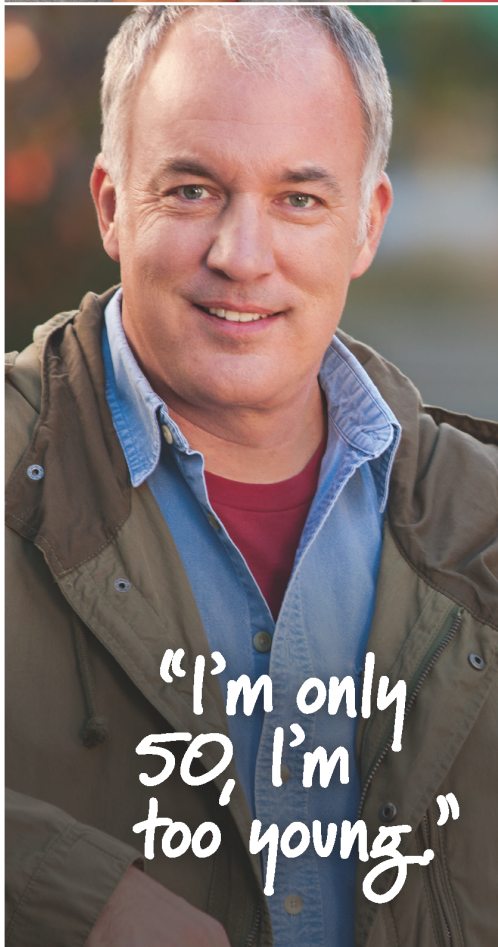INQUIRIES AND EXPRESSIONS OF INTEREST SHOULD BE DIRECTED TO:

## Shiyoko Cothren, MHA

Associate Director for Administration
scothren@pennstatehealth.psu.edu

**PennState Health**
Milton S. Hershey
Medical Center

**PennState**
College of Medicine

**"I don't have symptoms."**

**"It doesn't run in my family."**

**Heard all the excuses?**

**"I'm only 50, I'm too young."**

**"But that test..."**

**You know your patients aged 50+ should get screened for colorectal cancer – so give them the facts!**

Get FREE factsheets and brochures in English and Spanish from the Centers for Disease Control and Prevention.

**Screen for life**
National Colorectal Cancer Action Campaign

**U.S. Department of Health and Human Services**
Centers for Disease Control and Prevention

**www.cdc.gov/screenforlife**
**1-800-CDC-INFO**

**ASPO** *American Society of Preventive Oncology*

# Restaurant Suggestions from the Local Host Committee:
43rd Annual Meeting of the American Society of Preventive Oncology

## Casual Dinning (sit-down)

Casual Dinning (sit-down)

First Watch* (0.4 miles)
520 N Tampa St., Tampa, FL 33602
(813) 307-9006
M-Sun 7am-2:30pm
www.firstwatch.com

18 Bagels Co. (3.4 miles)
111 S Dale Mabry Hwy, Tampa, FL 33609
(813) 350-0767
M-Sun 6am-3pm
www.18bagels.com

Daily Eats* (2.4 miles)
901 S Howard Ave, Tampa, FL 33606
(813) 868-3335
M-F 7am-8:30pm; Weekend 8am-8:30pm
www.ilovedailyeats.com

Ciccio Water* (2.3 miles)
1015 S Howard Ave, Tampa, FL 33606
(813) 251-8406
M 11:30am-9:30pm; Tues-Thur 11:30am-10pm
F 11:30am-11pm;Sat 11am- 11pm;Sun
11am-9:30pm
www.cicciowater.com

Oxford Exchange* (0.7 miles)
420 W Kennedy Blvd, Tampa, FL 33606
(813) 253-0222
M-F 7:30am-5:30pm; Weekend 9am-5:30pm
www.oxfordexchange.com

Bamboozle Café* (0.4 miles)
516 N Tampa St, Tampa, FL 33602
(813) 223-7320
M-F 10:30am-4:30pm and 5pm-10pm;
Sat-Sun: Closed
www.bamboozlecafe.com

* vegetarian options

Hattricks (0.1 miles)
107 S Franklin St, Tampa, FL 33602
(813) 225-4288
M-Sun 11:15am-3am
www.hattrickstavern.com

Datz* (3.7 miles)
2616 S MacDill Ave, Tampa, FL 33629
(813) 831-7000
M-F 7am-10pm; Sat 8:30am-11pm; Sun 8:30am-9pm
www.datztampa.com

Green Lemon (2.2 miles)
915 S Howard Ave, Tampa, FL 33606
(813) 868-5463
M-Thur 11am-11pm; Fri 11am-1am; Sat 10am-1am;
Sun 10am-10pm
www.eatgreenlemon.com

Goody Goody Burgers* (1.8 miles)
1601 W Swann Ave, Tampa, FL 33606
(813) 308-1925
Sun-Thur 7am-9pm; Fri-Sat 7am-10pm
www.goodygoodyburgers.com

## Quick Service

Taco Dirty* (2 miles)
2221 W Platt St, Tampa, FL 33606
(813) 314-7900
Sun-Mon 11am-9pm; Tues- Sat 11am-10pm

Fresh Kitchen* (2.6 miles)
1350 S Howard Ave, Tampa, FL 33606
(813) 280-0515
Mon-Sat 11am-9:35pm; Sun 11am-9:05
www.eatfreshkitchen.com

## Quick Service (Cont.)

**Farmacy Vegan Kitchen & Bakery\* (0.8 miles)**
803 N Tampa St, Tampa, FL 33602
(786) 681-1644
M-F 7am-6pm; Weekend 8am- 6pm
www.farmacyvegankitchen.com

**Eddie and Sam's N.Y. Pizza (0.4 miles)**
203 E Twiggs St, Tampa, FL 33602
(813) 229-8500
Tues-Thurs 11am-10pm; Fri-Sat 11am-11pm
www.eddieandsamspizza.com

**Taco Bus\* (0.5 miles)**
505 N Franklin St, Tampa, FL 33602
(813) 397-2800
Sun- Thurs 11am- 12am; Fri-Sat 11am-3am
www.taco-bus.com

## Bakeries/Cafe

**La Segunda (2.4 miles)**
4015 W Kennedy Blvd, Tampa, FL 33609
(813) 540-9119
M-Sun 6:30am-3pm
www.lasegundabakery.com

**Dough (3.7 miles)**
2602 S MacDill Ave, Tampa, FL 33629
(813) 902-1979
M-Thurs 7am-10pm; Fri 7am-11pm; Sat
8am-11pm; Sun 8am-9pm
www.bestdoughnuts.com

**Mini Donut Factory\* (4.3 miles)**
2109 S Dale Mabry Hwy, Tampa, FL 33629
(813) 254-5374
Mon-Sun 6:30am-6:30pm
www.minidoughnutfactory.com

\* vegetarian options

**Little Donut House (3.6 miles)**
4048 W Kennedy Blvd, Tampa, FL 33609
(813) 769-9209
M-F 6:30am-4pm; Sat 8am-12pm; Sun 8am-4pm
www.littledonuthouse.com

**Buddy Brew Coffee\* (1.7 miles)**
2020 W Kennedy Blvd, Tampa, FL 33606
(813) 258-2739
M-F 6:30am-7pm; Weekend 8am-7pm
www.buddybrew.com

**Indigo Coffee House & Social Bar\* (0.5 miles)**
514 N Franklin St #102, Tampa, FL 33602
(813) 800-2633
M-W 7am-5pm; Thurs-Fri 7am-7pm; Sat
8am-3pm; Sun 8am-1pm
www.drinkindigo.com

**Starbucks (Kennedy)\* (1.5 miles)**
1600 W Kennedy Blvd, Tampa, FL 33606
(813) 251-3728
M-Sat 5am-11pm; Sun 5am-10pm
www.starbucks.com

**Café Hey\* (1.0 miles)**
1540 N Franklin St, Tampa, FL 33602
(813) 221-5150
Mon-Sun 8am- 4pm
www.cafehey.com

## Upscale Dinner

**Bizou Brasserie\* (0.5 miles)**
601 N Florida Ave, Tampa, FL 33602
(813) 227-9555
Sun-Thurs 6am- 10pm; Fri-Sat 6am-11pm
www.bizoutampa.com

**Bulla Gastrobar\* (2.4 miles)**
930 S Howard Ave, Tampa, FL 33606
(813) 773-8626
Mon- Wed 4pm-10 pm; Thurs 4pm-11pm;
Fri 11:30am-12am; Sat 11am-12am; Sun
11am-10pm
www.bullagastrobar.com

# Local Host Committee Suggestions

Ava* (2.2 miles)
718 S Howard Ave, Tampa, FL 33606
(813) 512-3030
Mon-Thurs 11:30am-2pm and 5pm-10pm; Fri
11:30am-2pm and 5pm-11pm; Sat 10:30am-2:30pm
and 5pm-11pm; Sun 10:30am-2:30pm and
5pm-9pm
www.avatampa.com

Cask Social Kitchen* (2.0 miles)
208 S Howard Ave, Tampa, FL 33606
(813) 251-0051
Mon 4pm-10pm; Tues- Wed 11am-10pm;
Thurs- Sat 11am-12am; Sun 4pm-10pm
www.casksocial.com

Boca* (1.5  miles)
901 W Platt St, Tampa, FL 33606
(813) 254-7070
Mon- Fri 11am-10pm; Sat 9:30am-11pm; Sun
9:30am-10pm
www.bocatampa.com

Wine Exchange Bistro* (1.7 miles)
1609 W Snow Ave, Tampa, FL 33606
(813) 254-9463
Sun- Mon 11:30am-9pm;
Tues- Thurs 11:30am- 10pm;
Fri-Sat 11:30- 11pm
www.wineexchangetampa-hub.com

Bartaco* (1.7  miles)
1601 W Snow Ave, Tampa, FL 33606
(813) 258-8226
Sun-Wed 11am-11pm; Thurs-Sat 11am-12am
www.bartaco.com

On Swann (1.7 miles)
1501 W Swann Ave, Tampa, FL 33606
(813) 251-0110
Sun-Thurs 11am-2pm and 5pm-10pm; Fri-Sat
11am-2pm and 5pm-11pm
www.onswann.com

* vegetarian options

Bern's Steak House (2.6 miles)
1208 S Howard Ave, Tampa, FL 33606
(813) 251-2421
Sun-Thurs 5pm-10pm; Fri-Sat 5pm-11pm
www.bernssteakhouse.com

Haven* (2.3 miles)
2208 W Morrison Ave, Tampa, FL 33606
(813) 258-2233
Mon-Thurs 5pm-10pm; Fri-Sat 5pm-11pm
www.haventampa.com

Ulele* (1.4 miles)
1810 N Highland Ave, Tampa, FL 33602
(813) 999-4952
Sun-Thurs 11am-10pm; Fri-Sat 11am-11pm
www.ulele.com

Anise Global Gastrobar* (0.3 miles)
777 N Ashley Dr, Tampa, FL 33602
(813) 225-4272
Mon 4pm-12am, Tues-Weds 11am-12am, Thurs
11am-1am, Fri-Sat 11am-2am, Sun 11am-12am
https://www.aniseglobal.com/

Columbia* (2.7 miles)
2117 E 7th Ave, Tampa, FL 33605
(813) 248-4961
Mon-Sat 11am-11pm, Sun 11:30am-9pm
http://www.columbiarestaurant.com/

Rooster & The Till* (5.3 miles)
6500 N Florida Ave, Tampa, FL 33604
(813) 374-8940
Mon-Sat 4pm-11pm
http://www.roosterandthetill.com/

Osteria* (0.7 miles)
3215 S MacDill Ave, Tampa, FL 33629
(813) 831-1210
Tues-Sun 5:30pm-10:30pm
https://www.osterianatalina.com/

* vegetarian options

Edison: Food & Drink Lab* (1.0 miles)
912 W Kennedy Blvd, Tampa, FL 33606
(813) 254-7111
Mon-Sun 11:30am-2:30pm and 5pm-10pm
www.edison-tampa.com

### Food Halls

Armature Works* (1.4 miles)
1910 N Ola Ave, Tampa, FL 33602
(813) 250-3725
Mon-Thurs 7am-10pm, Fri 7am-11pm, Sat
8am-11pm, Sun 9am-9pm
www.armatureworks.com

Hall on Franklin* (1.2 miles)
1701 N Franklin St, Tampa, FL 33602
(813) 405-4008
Mon-Thurs 7:30am-11pm, Fri 7:30am-2am, sat
9am-2am, Sun9am-5pm
https://thehallonfranklin.com/

Sparkman Wharf* (0.8 miles)
615 Channelside Dr, Tampa, FL 33602
(813) 345-5881
Mon-Tues closed, Weds-Sun 11am-11pm
https://sparkmanwharf.com/

## Activity Suggestions from the Local Host Committee:

43rd Annual Meeting of the American Society of Preventive Oncology

### Events

Gasparilla Music Festival (0.4 miles)
March 9-10
Curtis Hixon Park
https://gasparillamusic.com/

Blake Shelton: Friends & Heroes 2019
(0.5 miles)
March 8
Amelie Arena
https://tinyurl.com/y9j2ep2q

Tampa Bay Lightning vs. Detroit Red Wings
(0.5 miles)
March 9
Amelie Arena
https://tinyurl.com/yat2zoxe

Hamilton (0.8 miles)
Performing through March 10
David A. Straz, Jr. Center for the Performing Arts
https://www.strazcenter.org/hamilton

Hundred Days (0.8 miles)
Performing through March 24
David A. Straz, Jr. Center for the Performing Arts
https://tinyurl.com/ybz5u2dz

Tom Segura: Take it Down Tour (0.8 miles)
March 7-8
Tampa Theatre
http://tampatheatre.org/live/tom-segu-
ra-take-it-down-tour/

### Entertainment

Henry B. Plant Museum (0.6 miles)
401 W Kennedy Blvd, Tampa, FL 33606
(813) 254-1891
Mon closed; Tues-Sat 10am-5pm; Sun 12pm-5pm
www.plantmuseum.com

Glazier Children's Museum (0.6 mile)
110 W Gasparilla Plaza, Tampa, FL 33602
(813) 443-3861
Mon-Fri 10am-5pm; Sat 10am-6pm; Sun 1pm-5pm
www.glazermuseum.org

Tampa Museum of Art (0.7 mile)
120 Gasparilla Plaza, Tampa, FL 33602
(813) 274-8130
Fri-Wed 10am-5pm; Thurs 10am-8pm
http://tampamuseum.org/

Museum of Photography (0.5 miles)
400 N Ashley Dr, Tampa, FL 33602
(813) 221-2222
Mon-Thurs 11am-6pm; Fri 11am-7pm; Weekend 12-5pm
www.fmopa.org

Tampa Bay History Museum (0.7 miles)
801 Old Water St, Tampa, FL 33602
(813) 228-0097
Mon- Sun 10am-5pm
www.tampabayhistorycenter.org

Ybor City Historic Walking Tour (2.5 miles)
1600 E 8th Ave, Tampa, FL 33605
(813) 241-8838
http://yborcitytours.com

Dali Museum (25 miles)
1 Dali Blvd, St. Petersburg, FL 33701
(727) 823-3767
Fri-Wed 10am-5:30pm; Thurs 10am-8pm
www.thedali.org

**Busch Gardens (9.7 miles)**
10165 McKinley Dr, Tampa, FL 33612
(888) 931-5770
Monday-Sunday 10am-7pm
https://buschgardens.com/tampa/

**Cigar Industry History Tour (2.5 miles)**
1600 E 8th Ave, Tampa, FL 33605
(813) 241-8838
http://yborcitytours.com

**The Great Escape Room (0.2 miles)**
300 E Madison St #301, Tampa, FL 33602
(813) 586-0914
Mon-Thurs 9am-9:30pm, Fri-Sat 12pm-10:30pm,
Sun 12pm-8:30pm
https://thegreatescaperoom.com/

**Nebraska Mini-Mart (3.8 miles)**
4815 N Nebraska Ave, Tampa, FL 33603
(813) 231-9522
Monday – Closed, Tue - Thur 12pm - 10pm,
Fri - Sat 12pm - 11pm, Sun 12pm - 10pm
https://www.nebraskaminimart.com/

**Zoo Tampa (6.2 miles)**
1101 W Sligh Ave, Tampa, FL 33604
(813) 935-8552
Mon-Sun 9:30am-5:00pm
https://zootampa.org/

## Recreation

**Riverwalk (0.1 miles)**
Tampa Riverwalk, Tampa, FL 33602
(813) 221-1539
Open 24 hours a day
www.thetampariverwalk.com

**Kraken Cycle Boats (0.4 miles)**
(813) 321-0560
https://www.krakencycleboats.com/tampa/

**Tampa Bay Water Bike Co (0.5 miles)**
http://www.tampawaterbikes.com/

**Bayshore Linear Park Trail (2.4 miles)**
312 Bayshore Boulevard, Tampa, FL 33611
(813) 274-8615
Mon-Sun Sunrise to Sunset
https://tinyurl.com/y85yr5jw

**Florida Eco Adventures (5.8 miles)**
813-501-3267
http://www.floridaecoadventures.com

**Tampa Bay Water Bike Co (0.5 miles)**
http://www.tampawaterbikes.com/

**Tampa Bay SUP Stand Up Paddle Boarding (1.2 miles)**
http://www.tampabaysup.com

**Courtney Campbell Causeway (11.2 miles)**
http://www.tbrpc.org/scenic/

## Nightlife

**American Social (0.6 miles)**
601 S Harbour Island Blvd #107, Tampa, FL 33602
(813) 605-3333
Sun-Wednesday 11:30am- 12am; Thurs-Fri
11:30am-2am; Sat 11am-2am; Sun 11am-12am
www.americansocialbar.com

**Jackson's Bistro, Bar & Sushi (0.6 miles)**
601 S Harbour Island Blvd, Tampa, FL 33602
(813) 277-0112
Mon-Thurs 11am-10pm; Fri 11am-12am; Sat
11am-3am; Sun 10:30am-10pm
www.jacksonsbistro.com

**Franklin Manor (0.8 miles)**
912 N Franklin St, Tampa, FL 33602
(813) 487-9990
Mon 8pm-3am; Tues-Wed 4pm-1am; Thurs-Fri
4pm-3am; Sat 11am-3am; Sun 11am-1am
www.thefranklinmanor.com

## Nightlife (Cont.)

CW's Gin Joint (0.5 miles)
633 N Franklin St, Tampa, FL 33602
(813) 816-1446
Sun-Tues 5pm-12am; Wed-Sat 5pm-2am
www.cwginjoint.com

## Theater/Arena

Tampa Theatre (0.7 miles)
711 N Franklin St, Tampa, FL 33602
(813) 274-8981
www.tampatheatre.org

Duke Energy Center for the Arts - Mahaffey
Theater (25 miles)
400 1st St S, St. Petersburg, FL 33701
(727) 892-5767
www.themahaffey.com

Amalie Arena (0.5 miles)
401 Channelside Dr, Tampa, FL 33602
(813) 301-6500
www.amaliearena.com

David A. Straz, Jr. Center for the Performing Arts
(0.8 miles)
1010 N Macinnes Pl, Tampa, FL 33602
(813) 229-7827
www.strazcenter.org

MIDFLORIDA Credit Union Amphitheatre
(8 miles)
4802 US-301, Tampa, FL 33610
(813) 740-2446
www.midflorida.com

## Beaches

Clearwater Beach (25 miles)
https://www.visitflorida.com/en-us/cities/clear-water-beach.html

Fort De Soto (35 miles)
http://www.pinellascounty.org/park/05_ft_deso-to.htm

St Pete Beach (30 miles)
https://www.visitstpeteclearwater.com/commu-nities/st-pete-beach

## Transportation

Uber
https://www.uber.com/fare-estimate/

Lyft
https://www.lyft.com/rider

The Downtowner
https://tinyurl.com/y7w9zcul

The Pirate Water Taxi (0.5 miles)
https://www.piratewatertaxi.com

TECO Line Streetcar System (0.8 miles)
603-611 Channelside Dr, Tampa, FL 33602
(813) 254-4278
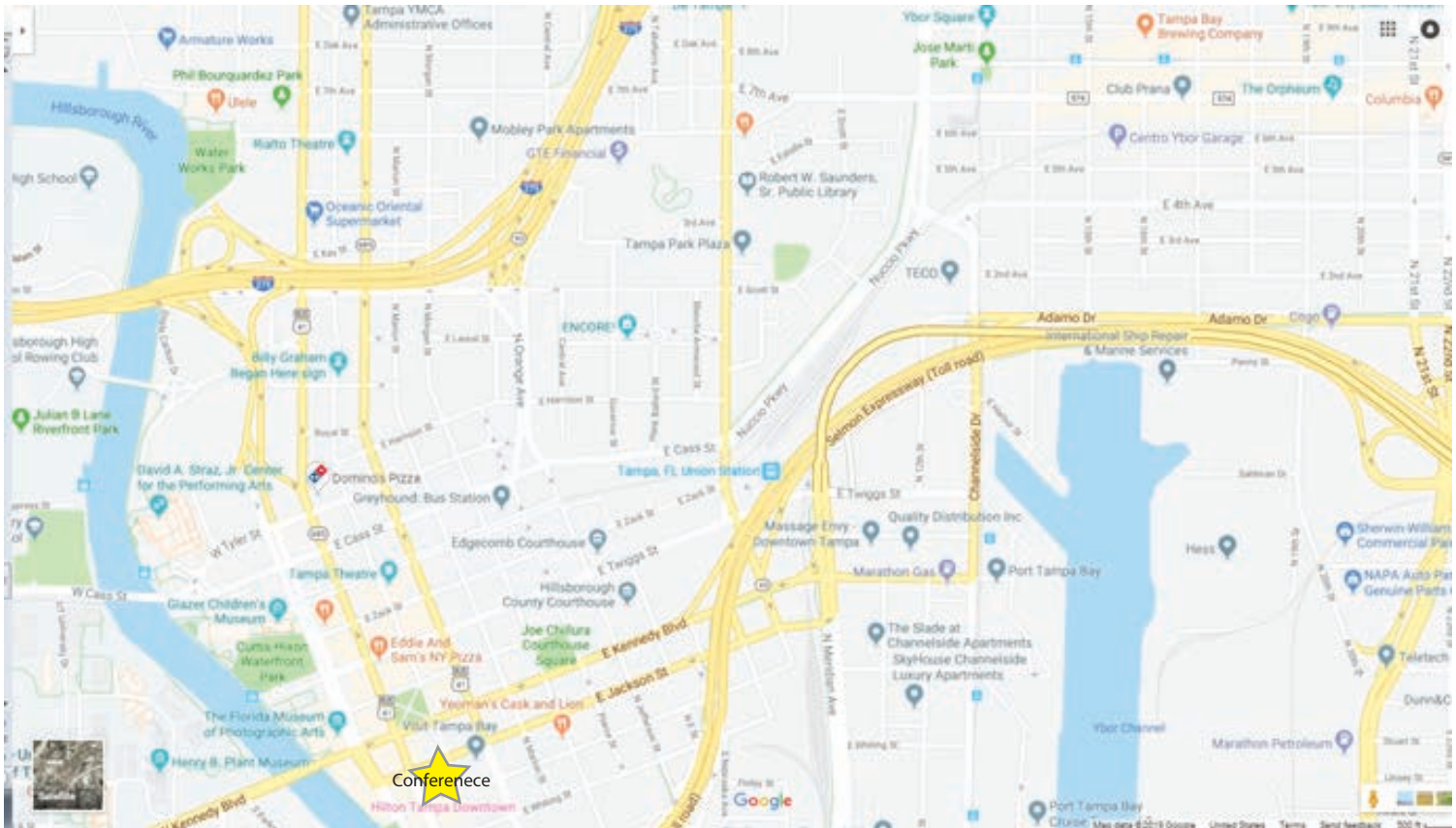Mon-Thurs 12pm-10pm; Fri-Sat 11am-1:30am;
Sun 12pm-8pm
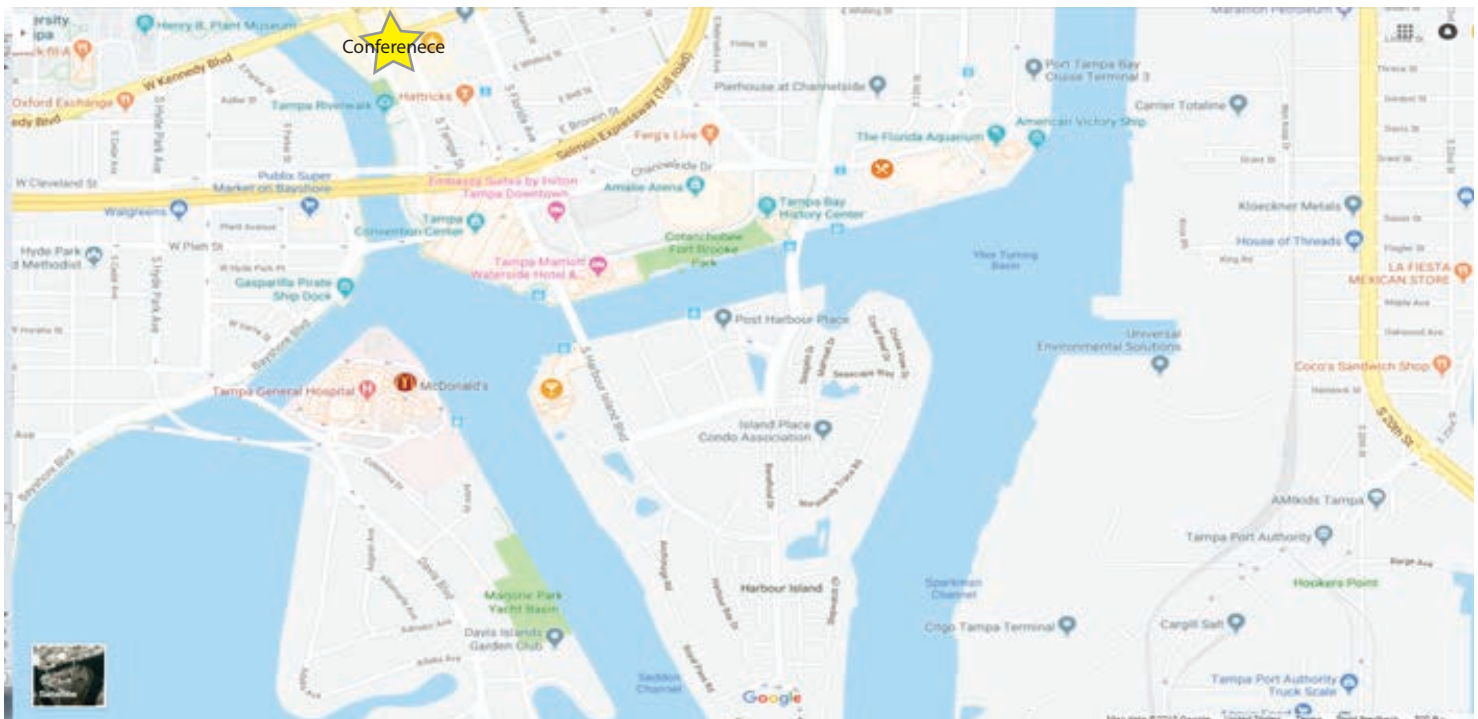www.tecolinestreetcar.org

Riverwalk Boating Co (0.5 miles)
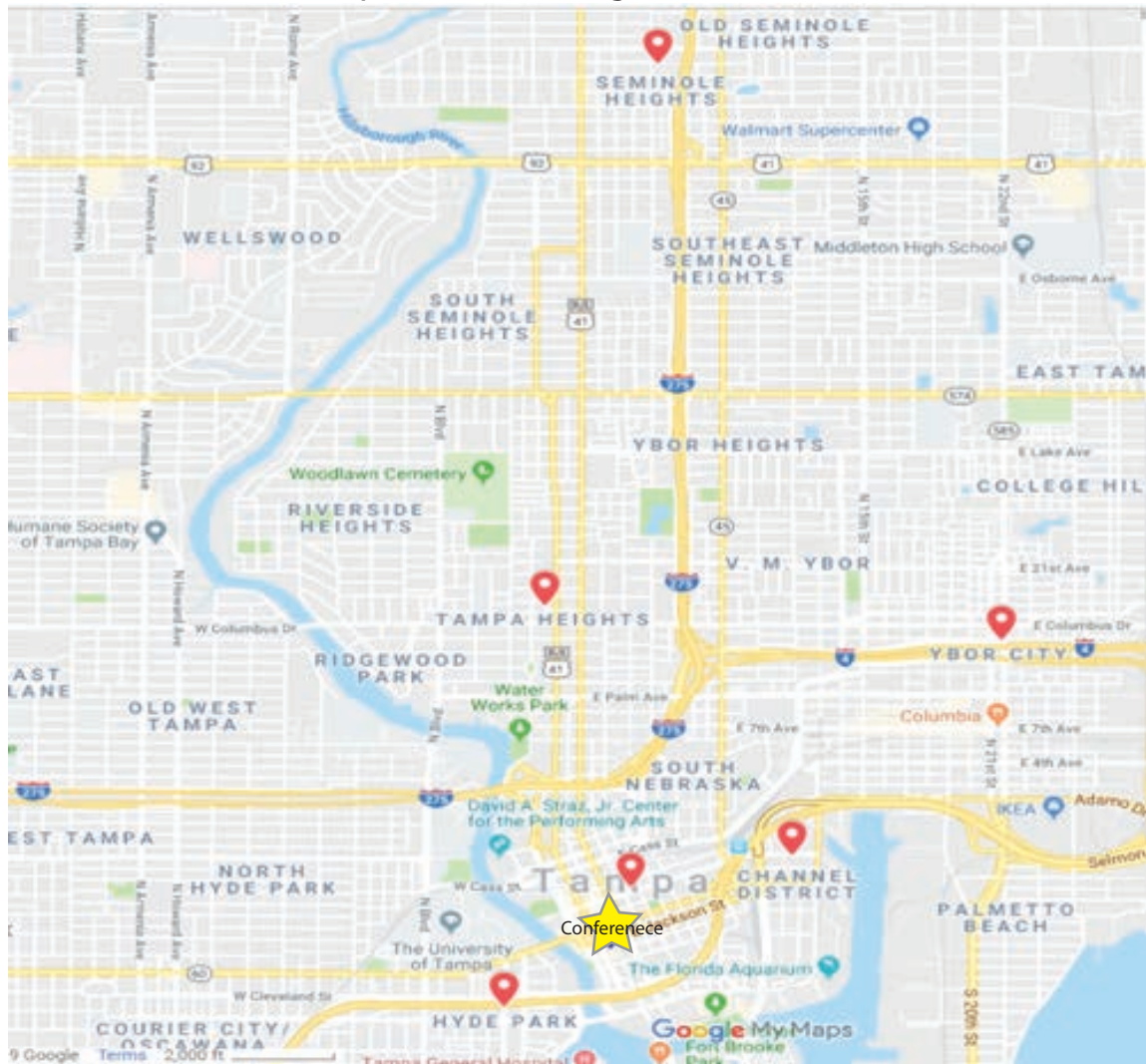http://riverwalkboating.com

# Local Host Committee Suggestions

## North Downtown



## South Downtown

## Tampa's Notable Neighborhoods



### Hyde Park
- Hyde Park Village: An upscale open-air shopping district, featuring shopping, dining, and cinema Tampa Heights
- Water Works Park: Located on the Tampa Riverwalk, this park features a festival lawn, splash pads, playground, dog park, and picnic spots.
- Armature Works: Fully restored mixed-use building on the Tampa Riverwalk that offers dining, shopping, and recreation.

### Ybor City
- 7th Avenue: A historic strip located in the Historic Cigar District with shopping, dining, and nightlife.
- Guided Tours: Explore everything from spooky to historical tours.
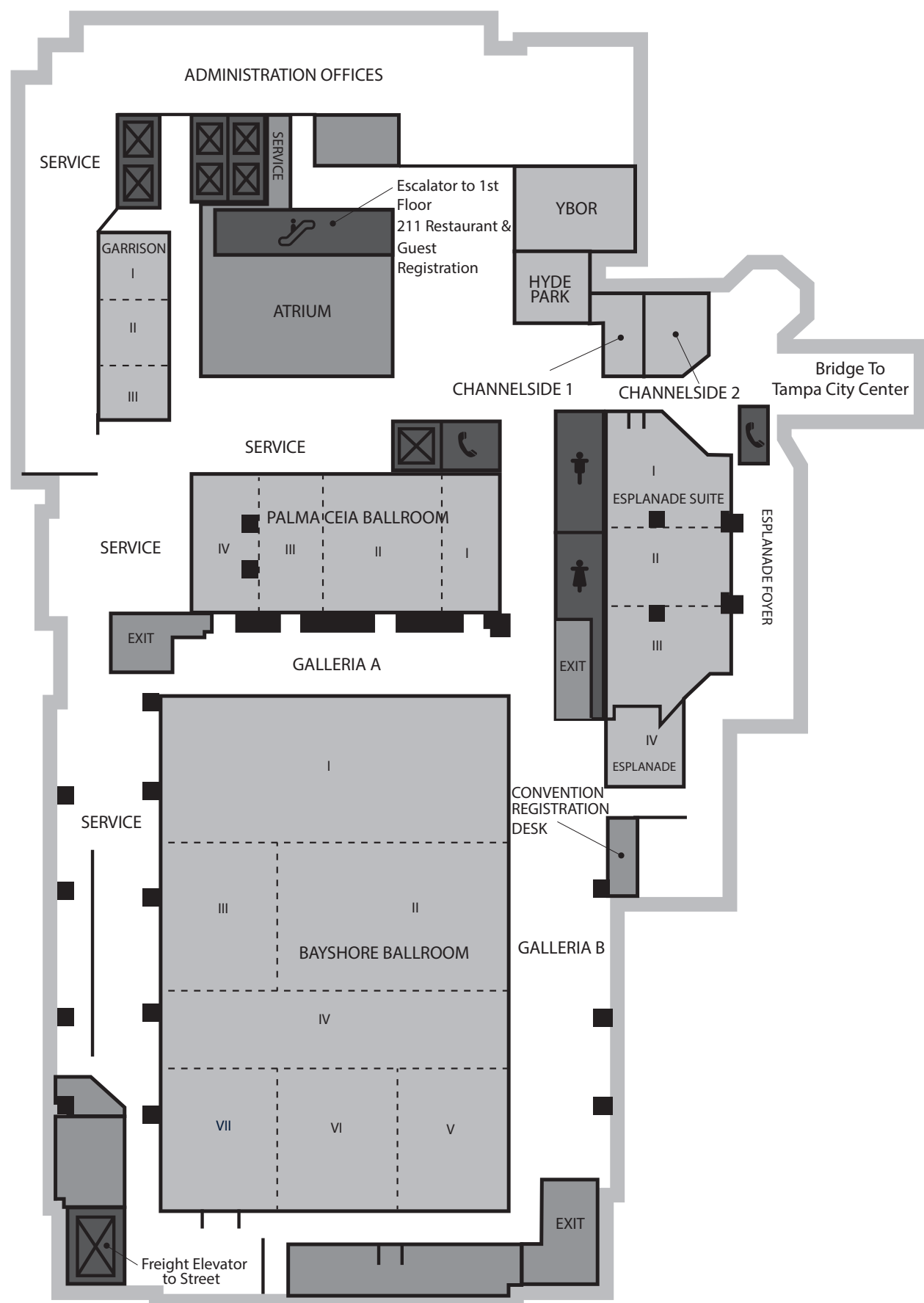
### Channelside
- Sparkman Wharf: An acre of open space with an event lawn, biergarten and dining garden, situated in a relaxed, outdoor waterfront setting.
- Florida Aquarium: Enables you to get up close to many of Florida's aquatic and terrestrial animals and ecosystems, as well as others from around the world.

### Seminole Heights
- Nebraska Mini Mart: Food, drink, and game venue with options such as ping-pong, shuffleboard, and bocce ball.
- Seminole Heights is a historic neighborhood with old bungalows, eclectic shops, gourmet dining, and a unique bar scene.
- Notable restaurants: The Refinery, Ella's Americana Folk Art Café, The Independent, Rooster & The Till

# Floor Plan

ADMINISTRATION OFFICES

SERVICE

SERVICE

Escalator to 1st Floor
211 Restaurant & Guest Registration

YBOR

HYDE PARK

GARRISON
I

II

III

ATRIUM

CHANNELSIDE 1

CHANNELSIDE 2

Bridge To
Tampa City Center

SERVICE

SERVICE

PALMA CEIA BALLROOM

IV          III          II          I

EXIT

GALLERIA A

I

ESPLANADE SUITE

II

III

EXIT

IV
ESPLANADE

ESPLANADE FOYER

SERVICE

III

II

BAYSHORE BALLROOM

I

IV

VII          VI          V

GALLERIA B

CONVENTION
REGISTRATION
DESK

EXIT

Freight Elevator
to Street

# Volunteer Committees

## LOCAL HOST COMMITTEE

Chrisine Pierce
Susan Vadaparampil

## ABSTRACT REVIEW COMMITTEE

Melinda Aldrich
Samuel Antwi
Elisabeth Bandera
Elisabeth Beaber
Allison Burton-Chase
Adriana Coletta
Casey Daniel
Yvonne Eaglehouse
Carolyn Fang
Leah Ferrucci
Sheetal Hardikar
Jennifer Hatcher
Grace Hillyer
Peter Kanetsky
Monica Kasting
Linda Ko
Amy Leader
Charles LeHew
Sharon Manne
Amy McQueen
Lorelei Mucci
Hazel Nichols
Heather Ochs-Balcom
Omonefe Omofuma
Suzanne O'Neill
Electra Paskett
Lynette Phillips
Jesse Plascak
Ramzi Salloum
Stephanie Staras
Staci Sudenga
Jasmin Tiro
Jennifer Tsui
Celine Vachon
Carmina Valle
Jacqueline Vo
Charnita Zeigler-Johnson
Xiaochen Zhang

## POSTER JUDGES

Wendy Denmark-Wahnefried
Christina Dieli-Conwright
Patricia Mullen
Jesse Nodora
KatherineReeves
Michael Scheurer
Aubree Shay

# Program At a Glance

## SUNDAY, MARCH 10, 2019

| | |
|---|---|
| 8:00 a.m. - 5:00 p.m. | Conference Registration (**Galleria B**) |
| 9:00 a.m. - Noon | New Investigators Workshop (**Palma Ceia 3**) |
| 12:30 p.m. - 2:30 p.m. | Working Lunch Meeting of the ASPO Executive Committee (**Garrison Suites**) |
| 1:00 p.m. - 3:45 p.m. | ASPO Junior Members Sessions (**Bayshore 2**) |
| 3:00 p.m. - 4:00 p.m. | Meeting of NCI R25T & T32 Training Program Principal Investigators (**Esplanade 1**) |
| 4:15 p.m. - 7:30 p.m. | Opening Session of the ASPO General Meeting (**Bayshore 1**) |
| 6:00 p.m. - 7:30 p.m. | Symposium 1: Innovations and Interventions to Address Cancer Health Disparities at the Residential and Systems Level (**Bayshore 1**) |
| 7:30 p.m. - 8:30 p.m. | Junior-Senior Networking Mixer (**Esplanade Patio**) |
| 8:30 p.m. | *Dinner on your own* |

## MONDAY, MARCH 11, 2019

| | |
|---|---|
| 8:00 a.m. - 9:30 a.m. | Breakfast Session 1:  Cancer Health Disparities (**Palma Ceia 1-3**) |
| 8:00 a.m. - 9:30 a.m. | Breakfast Session 2:  Survivorship, Health Outcomes & Comparative Effectiveness (**Bayshore 2**) |
| 9:30 a.m. - 10:00 a.m. | *Break* |
| 10:00 a.m. - 11:30 a.m. | Symposium 2:  Cellular Senescence, Accelerated Aging, Sarcopenia and Frailty (**Bayshore 1**) |
| 11:45 a.m. - 1:00 p.m. | Lunch Session: Best of Cancer Epidemiology, Biomarkers and Prevention (**Bayshore 1**) |
| 1:00 p.m. - 2:30 p.m. | Paper Session 1: Environmental and Molecular Exposures and the Cancer Spectrum (**Bayshore 1**) |
| 1:00 p.m. - 2:30 p.m. | Paper Session 2: Cancer Screening (**Bayshore 2**) |
| 2:30 p.m. - 3:00 p.m. | *Break* |
| 3:00 p.m. - 4:30 p.m. | Symposium 3:  Cutting to the Chase: Hybrid versus Sequential Designs in (**Bayshore 1**) |
| 4:30 p.m. - 5:30 p.m. | ASPO Business Meeting (**Bayshore 1**) |
| 5:30 .p.m. - 7:30 p.m. | Poster Session and Reception (**Bayshore 4-7**) |
| 7:30 p.m. | *Dinner on your own* |

## TUESDAY, MARCH 12, 2019

| | |
|---|---|
| 8:00 a.m. - 9:30 a.m. | Breakfast Session 3: Molecular Epidemiology and the Environment (**Palma Ceia 1-3**) |
| 8:00 a.m. - 9:30 a.m. | Breakfast Session 4 - Combined SIG Breakfast: Behavioral Science & Health Communication (**Bayshore 2**) |
| 9:30 a.m. - 10:00 a.m. | *Break* |
| 10:00 a.m. - 10:15 a.m. | ASPO/BCRF Cancer Prevention Research Fellowship Awardee Address |
| 10:00 a.m. - 11:30 a.m. | Symposium 4:  Innovative Strategies for Enhancing Participant Engagement, Intervention Delivery and Data Collection |
| 11:30 a.m. - 1:00 p.m. | Concurrent Lunch Sessions<br>Lunch session 1: Early career investigators - NCI Session on Career Development Awards (**Palma Ceia 2**) |
| | Lunch session 2: Late early career investigators (**Palma Ceia 3-4**) |
| | Lunch session 3: Mid- to senior investigators (**Palma Ceia 1**) |
| 1:15 p.m. - 2:45 p.m. | Paper Session 3: Methodologic Innovation in Cancer Research (**Bayshore 1**) |
| 1:15 p.m. - 2:45 p.m. | Paper Session 4: Cancer Survivorship and Caregiver Health (**Bayshore 2**) |
| 2:45 p.m. | *Conference Concludes* |