#ASPO2025

ASPO

49th Annual Meeting

April 6-8, 2025

Loews Philadelphia

Conference Abstracts

Table of Contents

Looking Back, Thinking Forward Flash Talks

Monday, April 7

Tuesday, April 8

Best of ASPO Oral Presentations

Monday, April 7

Tuesday, April 8

Poster Abstracts

Sunday, April 6

Monday, April 7

Extending the Estimated Benefits and Harms of Lung Cancer Screening from the National Lung Screening Trial (NLST) to a Nationally Representative US Screening-Eligible Population

Su I, Henderson LM, Chen X, Hudgens MG,
Reuland D, Rivera P, Schlusser C, St√ºrmer T,
Webster-Clark M, Lund JL

Purpose: To quantitatively extend the estimated benefits and harms of lung cancer screening with low dose computed tomography (LDCT) from NLST to a US population eligible for screening (target population).

Methods: We used individual-level data from NLST, including 53,454 individuals from August 2002 through April 2004. Participants were 55-74 years old and had a smoking history of at least 30 pack-years and, if formerly smoked, had quit within the past 15 years. For the target population, we used the 2022 Behavioral Risk Factor Surveillance System (BRFSS), a nationwide, phone-based survey that included questions on demographics, health history, and screening usage. We computed inverse odds weights (IOWs) to reweight the NLST to reflect the target population's covariate distribution, incorporating survey sampling weights. We estimated the benefit of LDCT screening to reduce lung cancer and all-cause mortality using an IOW-weighted Poisson model. We compared the false-positive rates of LDCT between the target and trial populations using the LUNG-RADS screening criteria.

Results: Our analysis included all NLST participants and 15,160 screening-eligible BRFSS respondents (7,013,664 weighted). Compared to the trial population, the target was older, more racially and ethnically diverse, more likely to currently smoke, and more likely to have respiratory comorbidities. We observed a similar benefit of LDCT on lung cancer mortality in the target population (rate ratio (RR) (95% CI): 0.82 (0.69-0.98)) compared to the trial (0.80 (0.69-0.92)). The benefit of LDCT on all-cause mortality was also similar (RR (95% CI): 0.94 (0.87-1.02) vs. 0.93 (0.88-0.99), respectively). False-positive rates in the LDCT arm were higher in the target versus trial population across all three screening exams (14.18, 6.11, and 5.69% vs. 13.03, 5.53, 5.13%, respectively).

Conclusions: We report a similar benefit and slightly increased harm of LDCT screening in the target compared to the trial population due to differences in sociodemographic and clinical characteristics. Our findings assume that screening adherence and diagnostic work-up were the same in the trial and target populations; future work will leverage alternative methods to address these issues.

Effectiveness of Delivery of Lung Cancer Screening Educational Communication Through EHR Patient Portal

Vasavada A, Palazzo L, Triplette M, Gao H, Anderson ML,
Luce C, Su YR, Ralston J, Rogers K, Bezman N, Green BB,
Carter-Bawa L, Wernli KJ

Purpose: Lung cancer screening (LCS) remains low, partly due to patient needs for additional education beyond shared-decision making. Digital health interventions using the patient portal could be an efficient delivery mode to improve LCS implementation. We leveraged a pragmatic clinical trial to evaluate effectiveness of patient portal delivery for a LCS patient education intervention to improve annual screening adherence.

Methods: Study participants were Kaiser Permanente Washington members aged 50-78 years who completed a LCS scan with normal results. Participants were randomized to education intervention or usual care, delivered near the time of normal scan. We evaluated multilevel factors associated with 1) patient portal enrollment (yes/no) (n=1837 full trial population); and 2) opening intervention message in patient portal (yes/no) (n=820). Opening portal message analysis was restricted to those randomized to the intervention arm. We used multivariate log binomial regression to calculate prevalence ratios (PRs) and associated confidence intervals (CIs).

Results: Overall, 89% (n=1646) were enrolled in the patient portal, leaving 11% (n=191) of participants not enrolled. Among those enrolled and randomized to the intervention, 85% (n=666) opened the portal message, leaving 15% (n=154) who did not. Factors associated with no enrollment on patient portal were: older age (PR 0.95, 95% CI 0.90-0.99, continuous); current tobacco use (PR 0.4, 0.3-0.6); median family income <$50K (PR 0.3, 0.2-0.7 compared with >100K); >median area deprivation index (ADI) (PR 0.6, 95% 0.3-1.0 compared with <median ADI), well-care visit in last 12 months (PR 0.7, 95% 0.5-1.0 compared with no visit), and <5 years of consistent health insurance (PR=0.5, 0.3-0.8 compared with 10+ years). Factors associated with not opening portal message were current tobacco use (PR 0.5, 95% CI 0.3-0.8) and well-care visit (PR 0.6, 95% CI 0.4-0.9).

Conclusion: Overall, 7 in 10 trial participants were reached by education communication delivered through the patient portal. However, we identified disparities in both access and reach of portal communication, particularly by current tobacco use and ADI, that should be mitigated by alternate modes of communication.

Geographic Disparities in Lung Cancer Screening Uptake in the United States Using the 2021 United States Preventive Service Task Force Guideline

Gudina AT, Byrne C, Das A, Peterson CE, Hirko KA

Purpose: Lung cancer screening (LCS) with low-dose computed tomography reduces lung-cancer-specific mortality by 20% among high-risk individuals. While sociodemographic disparities in LCS are well documented, less is known about geographic variation in LCS uptake. The purpose of this study was to assess geographic disparities in LCS uptake according to the 2021 United States (U.S.) Preventive Service Task Force guidelines.

Methods: Data were obtained from the 2022 Behavioral Risk Factors Surveillance System. Multivariable logistic regression models were used to assess disparities in LCS uptake in the U.S. by geographic region (Northeast, Southeast, Midwest, Southwest, West), metropolitan status (metropolitan counties vs. nonmetropolitan counties) and rurality (urban vs. rural).

Results: Of the 28,071 participants eligible for LCS, 17.2% underwent LCS. LCS uptake was the highest in the Northeast region (21.7%) followed by the Midwest (17.7%) and the Southeast (17.1%), with lowest uptake in the Southwest region (12.1%). In multivariable models, individuals in the Southwest (OR: 0.48; 95%CI: 0.42 - 0.56), West (OR: 0.57; 95%CI: 0.51 - 0.64), Southeast (OR: 0.73; 95%CI: 0.66 - 0.81), and Midwest (OR: 0.78; 95%CI: 0.71 - 0.85) were less likely to undergo LCS than those in the Northeast. Individuals residing in nonmetropolitan counties were less likely to undergo LCS than those in metropolitan counties (OR: 0.82; 95%CI: 0.76 - 0.88). Individuals residing in rural areas were less likely to undergo LCS than those in urban areas (OR: 0.87; 95%CI: 0.80 - 0.95). In analysis stratified by region, lower LCS uptake in nonmetropolitan vs. metropolitan counties were evident only in the Northeast (OR: 0.76; 95%CI: 0.66 - 0.89) and Midwest regions (OR: 0.84; 95%CI: 0.75- 0.94). Individuals in rural areas were less likely to undergo LCS than those in urban areas only in the Northeast region (OR: 0.80; 95%CI: 0.66 - 0.97).

Conclusions: LCS uptake varied across geographic locations (i.e., region and rurality). Disparities in LCS uptake by metropolitan status and rurality differ across geographic regions. Findings of this study can inform targeted efforts to improve LCS uptake and reduce lung cancer disparities.

Looking Back, Thinking Forward: Evolving Approaches and New Directions in Addressing Disparities in Cancer Prevention and Screening

Cervical Cancer Screening Among Asian Women in a U.S. Urban Safety Net Health Setting, 2019-2024

Huang E, Amboree TL, Chiao EY, Montealegre JR

Cervical cancer is almost entirely preventable through vaccination and highly effective screening tests that can identify pre-cancerous lesions before progression to cancer. The Asian/Asian American population is comprised of heterogeneous subgroups who differ in regard to health behaviors. This study aims to evaluate if there are differences in cervical cancer screening participation by preferred language among Asian/Asian American women in an urban safety net health system. Electronic health records (EHR) from the Harris Health safety net health system were used to identify 2,249 screen-eligible non-Hispanic Asian individuals aged 21-65 between April 2019 and March 2024. Up-to-date (UTD) screening was defined as (1) having cervical cytology screening (e.g., Papanicolaou test) within 3 years for individuals aged 21-65 years or (2) having cytology/human papillomavirus (HPV) co-testing or HPV testing alone within 5 years for individuals aged 30-65 years. When stratified by preferred language, 64.9% of Vietnamese speakers were UTD compared to 43.3% of English speakers and 51.7% of those who spoke languages other than English, Spanish, and Vietnamese (p<0.0001). In multivariable analyses, Vietnamese-speaking Asian women had more than twice the odds of being UTD on screening compared to English-speaking Asian women (adjusted odds ratio [aOR]: 2.11, 95% confidence interval [CI]: 1.69 - 2.63) after controlling for age, insurance type, and time since last healthcare visit. Asian women with county-funded healthcare plans and those who were eligible for county benefits but considered uninsured had higher odds of being UTD when compared to those with private insurance (aOR: 1.35, 95% CI: 1.02 - 1.77; aOR: 1.42, 95% CI: 1.05 - 1.92, respectively). Our findings that Vietnamese-speaking Asian women had higher cervical cancer screening participation compared to English-speaking Asian women are contrary to reports in the literature of increased screening among English-speaking Asian women. These results contribute further evidence that the Asian American population is heterogeneous in regard to cervical cancer screening behaviors, highlighting the need for disaggregated data analyses to determine the specific factors that affect screening participation in this population.

Barriers and Facilitators to Mammography Among Hispanic Women with Intellectual Disabilities

Julian JR, Arana-Chicas E

Purpose of the study: This research explores the barriers and facilitators to mammography in Hispanic women with ID. Methods: This qualitative study explored the barriers and facilitators on mammogram receipt among Hispanic women with ID aged 40 and older and residing in Philadelphia. Semi-structured interviews were conducted in English or Spanish with participants or their primary caregiver and guided by domains of the social-ecological model. Thematic analysis was conducted using inductive and deductive coding.

Results: Eight Hispanic women with ID enrolled in this study. The mean age was 51 (SD=5.4), most had a mild ID diagnosis (75.0%), most lived in a state-funded residence (62.5%), and most participants interviewed were Hispanic women with ID (75.0%). Reported barriers included 1) families experiencing caregiver burden, 2) families not explaining mammograms to family members with ID, 3) primary care doctors not discussing breast cancer, and 4) mammograms being inaccessible. Facilitators include 1) basic knowledge of mammograms, 2) strong family support, 3) healthcare workers providing patient-centered care, 4) group housing providing coordination and support for mammograms, and 5) great relationships with their primary care doctor. Participants also provided recommendations to improve their mammography experience, including 1) discussing mammograms more, 2) doctors should be gentle and patient, and 3) mammograms should be more accessible.

Conclusion: Results support the need to address barriers and promote facilitators to mammography among Hispanic women with ID. In particular, these results point to the importance of infusing Hispanic values of familismo and personalismo to provide culturally appropriate mammography support to Hispanic women with ID. Participants' recommendations are a clarion call for systemic change in mammography support and denote the need for culturally tailored interventions. These results can inform healthcare providers, community organizations, and health departments about mammogram experiences and directions for improvements in this underserved population.

Learning Outcomes of Community-Based Science Education: Engaging Children from Medically-Underrepresented Backgrounds in a Cancer Biology and Prevention Curriculum

Eisenstein EN, Tercyak KP, Statman MR, Eyl J, Jones-Davis D, Manfred L, Stone D, Scharon CJ, Phillips A, Yockel MR, Sleiman Jr. MR, Dash C, Riggins RB

Purpose: To help mitigate cancer disparities, strengthening the pipeline of medically-underrepresented groups into STEM careers may begin as early as elementary school. We report on the learning outcomes of a diverse cohort of young students participating in a community-based science education program designed to foster interest in cancer biology and prevention.

Methods: Across SY23-SY24, N=403 (46% female, 81% African American or Latine) students from 3 elementary schools in under-resourced communities were enrolled in a cancer center-sponsored program at a children's STEM museum. On field trips, 3rd-5th graders rotated among maker-based learning activities on cancer biology and prevention topics, including environmental health and cancer risk, UVR exposure and skin cancer, cell biology, and immunology. Outcome assessments included self-report behavior rating scales of children's knowledge, identification with STEM careers, and related constructs. Data were examined in aggregate, and across grades to assess potential developmental trends.

Results: Post-program knowledge was high, with students correctly answering questions about sunburns (90%), cell biology (81%), and immune response (97%). Students' grade level was positively associated with knowledge: those in Grade 5 vs 3 correctly answered more questions assessing sunburn risk (98% vs 83%: $\chi 2=16$, $p<.01$) and biology (91% vs 77%: $\chi 2=8.1$, $p<.01$), but not immunology (96% for both). Program-driven identification with STEM careers was high: 99% reportedly practiced being a scientist and 97% being an engineer. These findings were further reinforced by students' self-attributes, where 91% endorsed beliefs associated with lifelong, inventive learning, 85% with an interest in STEM, and 92% with feelings of belonging in STEM ($r=.26$, $p<.01$). Across grades, no differences were observed in either students' identification with STEM careers or inventive learning.

Conclusions: Elementary students from underserved communities benefited from their participation in a cancer-focused science education curriculum, as demonstrated by their cancer knowledge, identification as scientists, and career interest in STEM. Programs such as this will help strengthen the pipeline of future cancer researchers and diversify the workforce.

Metformin Works As A Colorectal Cancer Prevention Agent By Reducing Proliferation And Inhibiting Cell Cycle

Das P, Patel D, Pham M, Medidi P, Loomans-Kropp HA

Purpose: Our objective was to evaluate the potential of metformin for colorectal cancer (CRC) prevention.
Methods: HT-29, HCT-15, and SW837 CRC cells were used for in vitro analyses. Cells were treated with 10mM (HT-29, HCT-15) or 2mM (SW837) metformin for up to 96 hours. Proliferation was assessed by raw cell counts, CellTiter 96 Aqueous Proliferation Assay, and 0.5% crystal violet staining. Propidium iodide staining was used to evaluate cell cycle and analyzed on a BD FACS Aria III. Experimental results were analyzed using Student's t-test or Mann-Whitney U and expressed as the mean +/- standard deviation. Statistical analysis of in vitro experiments was performed in Prism 10.0 (GraphPad) and significance was set at $p<0.05$. Sequencing was completed using an Illumina NovaSeq X Plus (Novogene). Differential expression analysis was performed using DESeq2RPackage and enrichment analysis using clusterProfiler and GSEA for Go, KEGG, Reactome, DO, and DisGeNET. Statistical significance was set at an adjusted $p<0.05$.

Results: We found that metformin treatment of CRC cells in vitro significantly reduced proliferation and cellular growth after 48 and 96 hours. Cell cycle analysis showed that metformin treatment increased the percent of cells in G1, suggesting G1 cell cycle arrest. Sequencing analysis identified 2738 and 2492 genes significantly up- and downregulated with metformin treatment, respectively. The top significantly differentially regulated genes were ATF3, SNAI2, UPP1, GDF15, and SLC20A1. Gene ontology analysis of metformin-treated SW837 cells showed differentially regulated genes involved in chromosome segregation, DNA replication, and cell cycle checkpoint, supporting our findings. Independent validation of top hits and key genes in pathways of interest, including CDC42, BRIP1, EME1, and POLE2, is ongoing.

Conclusions: Treatment of CRC cells with metformin significantly reduced cell proliferation and induced cell cycle arrest. Sequencing analysis showed significant regulation of cell cycle and proliferation-associated pathways, supporting our observed phenotype and providing insight into previously unidentified pathways regulated by metformin. The results from this study may have implications for the future use of metformin for CRC prevention.

Global Epidemiology of Liver Cancer Burden due to Hepatitis B Virus: A Comprehensive Estimate Based on Global Burden of Disease Study 2021

Cao M, Chen W

Purpose: To systematically evaluate the global epidemiological burden, risk factors, and long-term trends of HBV-related liver cancer.

Methods: Data from the Global Burden of Disease Study (GBD) 2021 was used to analyze the incidence, prevalence, and mortality rates of HBV-related liver cancer across 204 countries and territories. Age-Period-Cohort (APC) models were applied to examine age-specific trends, period effects, and cohort impacts on disease burden. The study also employed Pearson correlation analyses to assess associations between liver cancer burden, the Socio-Demographic Index (SDI), and Universal Health Coverage (UHC) index. Risk factor analysis was performed to evaluate the influence of other concomitant risk factors on HBV-related liver cancer deaths. Projections for future mortality trends from 2020 to 2040 were generated using Bayesian APC models.

Results: In 2021, the global incidence of HBV-related liver cancer was 206,365.7 cases, with 181,194.3 deaths. From 1990 to 2021, both incidence and prevalence increased, while mortality rates declined, particularly in high SDI regions. The Middle SDI region showed the highest age-standardized death rate (ASDR), while the highest incidence was observed in Mongolia, Gambia, and Mali. A negative correlation was found between the SDI, the UHC and liver cancer burden. The number of deaths attributable to risk factors increased by 97.84% from 1990 to 2021, with high BMI and tobacco use being the most significant. Projections indicate a 30.2% reduction in global HBV-related liver cancer mortality by 2040; however, the burden among females may increase due to risk factors such as non-alcoholic steatohepatitis and obesity.

Conclusions: The global burden of HBV-related liver cancer shows significant regional disparities, with a pronounced decline in mortality in high SDI regions. Socioeconomic factors and healthcare access, as measured by SDI and UHC, are closely associated with disease burden. The findings underscore the need for targeted interventions, including expanded vaccination, enhanced screening, and management of risk factors to mitigate future liver cancer burdens, particularly in low-SDI regions.

Investigating the Impact of Physical Activity during Puberty on Advanced Glycation End Product-Mediated Breast Cancer Risk

Krisanits BA, Lane J, Turner DP, and Findlay VJ

Background: The mammary gland develops postnatally, through puberty, pregnancy, lactation and involution. ‘Windows of susceptibility’ are phases of development that can be impacted by lifestyle, such as diet and physical activity (PA) to increase or reduce breast cancer risk. Advanced glycation end products (AGEs) are reactive metabolites produced endogenously as by-products of metabolism, or exogenously from diet. Mechanistically, AGEs promote chronic inflammation and oxidative stress promoting a pro-oncogenic microenvironment by signaling through the receptor for AGE (RAGE). Critically, PA has been shown to regulate circulating AGEs in diabetic and healthy patients and is associated with increased soluble RAGE (sRAGE), a molecular sponge for AGEs. Our published work shows a direct impact of dietary AGEs on the disruption of pubertal mammary development through stromal changes promoting a niche for breast cancer. The focus of this study is to evaluate the impact of pubertal PA on AGE-mediated mammary dysregulation and breast cancer risk.

Methods: Wild-type FVB/n mice were fed experimental diets from weaning: Regular (starch-based) and High AGE (sugar-based autoclaved for AGE formation). PA intervention via treadmill (1 hr, 5 days/week) began in a subset of mice at weaning until either 6 weeks (pubertal) or 8 weeks (tumor endpoints) of age. Mammary glands and/or tumors were collected for histology and for western blotting and qPCR. ELISAs were utilized to assess circulating sRAGE and AGEs at baseline and endpoint.

Results: Increased dietary AGE levels led to a delay in ductal extension and increased ductal branching, terminal end bud (TEB) number and size in 6-week-old mice. The introduction of regular PA was shown to negate the AGE-mediated increase in ductal branching, TEB number and size. The impact of PA was shown to be correlated with increased circulating sRAGE and decreased AGEs. Tumor studies are ongoing.

Conclusion: Dietary AGEs represent an early-life exposure that can impact mammary gland development and breast cancer risk. Preliminarily, pubertal PA represents an intervention to negate the impact of dietary AGEs on mammary development. Future studies aim to understand the mechanism of how PA intervention can reduce AGE-mediated breast cancer risk.

Multifaceted Psychosocial Stressors in Sexual Minority Cancer Survivors Are Modified by the State Governor's Political Affiliation: An All of Us (AoU) Research Study

Arizpe A, Navarro S, Ochoa-Dominguez CY, Kim SE, Farias AJ

Purpose: Given that sexual minority (SM) individuals may face discrimination and psychosocial stressors that can adversely impact their cancer care and outcomes, we aimed to examine for disparities in psychosocial stressors among SM cancer survivors and explore whether the disparities differ by the governor's political party for each state.

Methods: Perceived stressors and SM status data from 2018-2022 were obtained from AoU adult cancer survivors. SM identification was self-reported from a single question (heterosexual vs gay, lesbian, or bisexual). Using the Discrimination in Medical Settings [DMS], Perceived Stress [PSS], and Neighborhood Social Cohesion [NSC]) scales, single binary indicators were created from continuous values of DMS (experienced vs never), PSS (high/medium vs low), and NSC (high/medium vs low) to assess for stressor outcomes. Multivariable logistic regression and stratified models if interactions were statistically significant, adjusting for governor's political party, race/ethnicity, SES, age, marital status, nativity, active treatment status, sex, and PSS, NSC, or DMS stress variables were used.

Results: In our cohort (N=14,806), 6.3% of survivors reported being a SM. In adjusted models, compared to non-SM survivors, those who identified as SM were 36% (OR=1.36, 95%CI: 1.15-1.63) and 47% (1.47, 1.26-1.72) more likely to have experienced DMS and high/medium PSS, respectively, and were also 29% (0.71, 0.61-0.83) less likely to have experienced high/medium NSC. Additionally, SM survivors who resided in states with Democratic governors were 22% (1.27, 1.01-1.48) more likely to experience DMS compared to non-SM survivors, and SM survivors in states with Republican governors were 133%, (2.33, 1.51-3.74) more likely to experience DMS compared to non-SM survivors.

Conclusion: SM cancer survivors face significant stress disparities, regardless of their state's governor's political party, which may impact their cancer survivorship. However, those in Republican governor-run states are more likely to have DMS experiences, potentially affecting their access to care and overall health. Future studies should explore long-term effects of psychosocial stress on cancer survivorship outcomes in this population.

Barriers to PSA Testing: Examining Sociodemographic Disparities in Prostate Cancer Screening

Sabater Minarim D

Background: Disparities in healthcare access and screening are associated with disproportionately higher rates of prostate cancer (PC) and mortality. Using shared decision making between the healthcare provider and patient, PC can be detected early through prostate-specific antigen (PSA) testing. Yet, in the US there are still disparities in PSA testing. This study examines social demographic factors associated with barriers to PSA testing.

Methods: Using All of Us Research Program database, we analyzed individuals assigned male at birth, age 45-85 years and without a PC diagnosis. Variables included demographic (age, race/ethnicity, gender identity, marital status, birthplace), socioeconomic status (income, education, insurance status, Area Deprivation Index [ADI]), access to care (transportation issues, rural healthcare delays), health literacy (English proficiency, ease of understanding health information, seeking health advice), experiences of discrimination and disability status. Multivariable logistic regression was used to assess associations between these variables and receiving a PSA test, adjusting for potential confounders.

Results: A total of 43,652 participants were included in the analysis. Significant predictors of receiving a PSA test included older age (OR 1.03, 95% CI 1.03-1.03, p<0.001). Factors associated with lower odds of PSA testing were transgender/non-binary gender identity (OR 0.55, 95% CI 0.40-0.75, p<0.001), high ADI (OR 0.59, 95% CI 0.56-0.61, p<0.001), health care discrimination (OR 0.93, 95% CI 0.87-0.98, p=0.007), rural healthcare delays (OR 0.79, 95% CI 0.67-0.92, p=0.002), transportation issues (OR 0.87, 95% CI 0.79-0.97, p=0.009), disability status (OR 0.83, 95% CI 0.78-0.88, p<0.001), difficulty understanding health information (OR 0.82, 95% CI 0.74-0.91, p<0.001), and not having shared decision making during treatment (OR 0.86, 95% CI 0.80-0.92, p<0.001).

Conclusions: Our findings enhance our understanding of disparities in PSA testing, being associated with demographic, socioeconomic and access related barriers. Addressing these factors through improved access to care, reducing discrimination, enhancing health literacy, and fostering better patient-provider communication may help reduce disparities in PC screening

Best of ASPO Oral Presentations: Cancer Health Disparities

Racial/Ethnic Disparities in the Trends in the Incidence and Mortality of Tobacco-Related Cancers among Adults in the United States by Age Group

Guo F; Mansingka N; Hsu CD; Hoang TN; Baillargeon JG; Berenson AB; Adekanmbi V

Purpose: This study was to assess the trends in tobacco-related cancers incidence and mortality among adults in the United States by age group and race/ethnicity.

Methods: We use data for incidence of tobacco-related cancers from United States Cancer Statistics (USCS) 2001-2021. Mortality data from 1975 to 2022 related to tobacco-related cancers are from the National Center for Health Statistics (NCHS). Incidence and mortality rates were calculated as cases per 1,000,000 persons and age-adjusted to the 2000 US standard population.

Results: From 2001-2021, there were 14,099,363 cases of tobacco-related cancers among adults $\geq$20 years old. There were 14,716,987 deaths caused by tobacco-related cancer among adults from 1975 to 2022, including 8,607,833 deaths in males and 6,109,154 in females. In 2021, non-Hispanic American Indians/Alaska Natives had the highest incidence among adults 20-49 years old (346.8 per 1,000,000) and 50-64 years old (2,034.8 per 1,000,000), while non-Hispanic Whites had the highest incidence among adults 65 years and older (8,821.8 per 1,000,000). People in non-metro areas had higher cancer incidence in all age groups compared to those in metro area. There was an overall decreasing trend in both the incidence and mortality rates from 2001 to 2021/2022. Among adults 20-49 years old, there was an increasing trend in the incidence among non-Hispanic American Indians/Alaska Natives (APC 2.6, 95% CI 2.1 - 3.0) and those in the West (APC 0.2, 95% CI 0.0 - 0.4, $p=0.04$); in Hispanics, the incidence rate increased most recently from 2013 to 2021 (from 2001 to 2013, APC -0.5, 95% CI -1.5 - -0.1; from 2013 to 2021, APC 1.7, 95% CI 1.0 - 3.0). The mortality rate first increased from 1975 to 1990 among females 50-64 years old and males 65+ years old and from 1975 to 2000 among females 65+ years old, then decreased thereafter.

Conclusions: There is a general decline in the incidence and morality of tobacco-rated cancers among adults in the United Sates in the early 21st century. However, rising incidence in subgroups of the younger population highlights the need for targeted public health interventions to address disparities and improve cancer prevention in these vulnerable groups

---

ASPO Travel Award Winner

Association of Cultural Racism with All-Cause and Cancer-Related Mortality in the United States: (2018-2022)

Quezada-Pinedo HG, Osazuwa-Peters OL, Akinyemiju TF, Wilson LE, Krieger N and Brown T

Objectives: This study aimed to quantify associations between cultural racism and all-cause and cancer-related mortality in the USA, while examining potential effect modification by measures of structural racism and by geographical region.

Methods: We used state-level measures of cultural racism (cultural racism factor (CFR)), and structural racism including economic residential segregation (ICEincome), racial residential segregation (ICErace), racialized economic segregation (ICErace-income), Standardized Structural Racism Factor (SSRF) and State Racism Index (SRI), for 2017. Age-standardized mortality was estimated for 2018-2022. Confounder-adjusted linear mixed-effect models were applied.

Results: After adjustment for demographic, and socioeconomic variables, and correcting for multiple testing, each unit increase in CRF was associated with increased all-cause mortality (β (95%CI), 100.2 (75.7, 124.8) per 100,000, $p<0.001$) and higher cancer-related mortality (4.9 (9.9, 14.9) per 100,000, $p<0.001$). Adjustments for structural racism measures did not change the association between CFR and all-cause mortality, however the association between CRF and cancer-related mortality was attenuated in the presence of four out of five structural racism measures. The relationship between CRF and all-cause mortality was stronger at lower levels of ICEincome, and ICErace-income, and in the South and Midwest regions (p for interaction<0.001).

Conclusions: Cultural racism appears to be associated with all-cause mortality, independent of structural racism, with relatively stronger associations in states with high levels of racialized economic segregation. However, CRF's associations with cancer-related mortality appears to be modified by the effects of structural racism.

Composite area-level demographic measures show differences in breast cancer incidence rates by estrogen receptor status, supporting etiologic heterogeneity: Findings from USA SEER

Shah KK, Booker QS, Filho AD, Gierach GL, Mesa-Eguiagaray I, Vo JB, Davis-Lynn B, Rosenberg P, Figueroa JD

Purpose: Women living in higher-deprivation areas in Scotland have reported lower breast cancer (BC) incidence rates for estrogen receptor-positive (ER+) tumors compared with lower-deprivation areas but not for estrogen-negative (ER-) tumors. Here we assess the relationship between BC incidence rates and an area-level composite measure of deprivation in the USA and whether rates differ by race and ethnicity.

Methods: We analyzed 841,563 U.S. women ages 1-84+ diagnosed with invasive BC between 2006–2020. Age-standardized incidence rates (ASR) and 95% CI were calculated by ER status, census-tract-level quintiles of the Yost index, race and ethnicity: non-Hispanic Whites (NHW), non-Hispanic Blacks (NHB), Hispanics, Non-Hispanic Asian and Pacific Islanders (NHAPI) and Non-Hispanic American Indian/Alaska Native (NHAIAN). The Yost index combines information on wealth, education employment, and housing, with the lowest quintile (Q1) representing the greatest deprivation area and the highest (Q5) the least. Incidence rate ratios (IRR) were calculated to compare rates across different groups.

Results: ASR were highest among NHW women with ER+ tumors from Q5 (Q5 ASR=124, 95%CI=123-125). NHW in the lowest Yost quintiles had 40% lower ER+ tumor rates (Q1 ASR= 87.8, 95%CI=86.9-88.6). Higher ER+ rates were observed for higher compared to lower Yost quintile areas for all racial and ethnic groups, although among NHB, differences were attenuated (Q5vsQ1 IRR=1.16, 95%CI=1.10-1.22). Compared to NHW in Q1, other racial and ethnic groups had 7-50% lower ER+ rates, with NHAIAN having the lowest rates (ASR=43.3, 95%CI=40.0-46.8). In contrast, rates for ER- tumors did not differ by Yost quintiles for any racial and ethnic groups. NHB women had the highest ER- rates regardless of Yost index (NHB Q1 ASR=36.1, 95%CI=35.4-36.9 and NHB Q5 ASR=33.1, 95%CI=31.8-34.5), about 60% higher than NHW (NHW Q5 ASR= 20.6, 95%CI=20.3-20.8).

Conclusion: ER+ breast tumor incidence rates showed relationships with Yost but not ER- rates, supporting etiologic heterogeneity. Factors captured by the Yost index likely do not explain higher ER- rates seen among NHB women. Studies should incorporate area-level demographic indices to further our understanding their role in the molecular epidemiology of cancer.

Survival Differences between Early Onset (< 50 years) and Average Onset (≥ 50 years) Colorectal Cancer among African Americans in Metropolitan Detroit

Patil S., Purrington K., Hsieh M., Ruterbusch J., Wenzlaff A., Pandolfi S., Schwartz A., Stoffel E., Rozek. L.

Purpose: We assessed the differences in overall survival (OS) by age at colorectal cancer (CRC) diagnosis among African Americans (AA) in Metropolitan Detroit.

Methods: These data were collected as a part of the Detroit Research on Cancer Survivors (ROCS) and the Disparities and Cancer Epidemiology (DANCE) studies. We analyzed data from 491 AA participants newly diagnosed with invasive CRC from 2013 to 2021 within the Metropolitan Detroit Cancer Surveillance System catchment area. Participants (n = 491) completed written, online, or interviewer-assisted surveys and were categorized as early onset (EO: <50 years, n = 64) and average onset (AO: ≥ 50 years, n = 427) based on age at CRC diagnosis. Demographic, clinical, pathological, dietary, physical activity, smoking and alcohol variables at time of enrollment were assessed among the two subgroups. Kaplan-Meier survival analysis was performed to produce crude and site- and stage-stratified survival curves. Cox proportional hazards models were used to model survival outcomes among early versus average onset AA CRC participants adjusting for insurance type, primary site, and SEER stage (local, regional, distant).

Results: The average age of onset was 43.6 (range 28 - 49) and 63.7 (range 50 - 84) for EO and AO cases respectively. EO cases were more likely to be diagnosed at distant stages (25.4% vs 15.6%, p<0.02) and less likely to be diagnosed with a right-sided tumor (35.9% vs 46.8%, p>0.05) although this did not reach statistical significance. EO cases were also more likely to have private insurance (46.9% vs 23.2%, p<0.0001) and report never smoking (73.4% vs 49.4%, p<0.002). EO CRC cases had higher mortality overall (HR = 1.32, 95% CI 0.82 - 2.12). While no mortality differences were detected by age for local stage CRC, mortality was higher for EO cancers for both regional (HR = 1.99, 95% CI 1.28 - 3.08) and distant (HR = 10.18, 95% CI 6.50 - 15.93) stage CRC after adjustment for site and insurance.

Conclusions: Within-stage differences in mortality between EO and AO cases may be indicating more aggressive disease or differences in treatment in AA EO compared to AO CRC patients. Our ongoing analyses address tumor phenotypes and other factors that may be associated with more aggressive disease.

Best of ASPO Oral Presentation: Place, Policy, and Cancer Disparities

Applying the County Health Rankings Model to Identify Priorities for Cancer Prevention and Control Interventions

Trentham-Dietz A, Lawler TP, Gangnon RE, Dahlke A, LoConte N, Ward E, Givens ML

The County Health Rankings (CHR) Model, developed over a decade ago to provide a framework for prioritizing health-related investments including setting agendas, implementing policies, and sharing resources for improving community health and health equity, includes multiple determinants of health and two broad health outcomes - length of life and quality of life. We applied the CHR Model to cancer outcomes. Using county-level publicly available data, Health Factor summaries were derived for determinants of health in four areas: health behaviors (e.g., smoking, obesity), clinical care (e.g., health insurance, vaccination), social and economic factors (e.g., education, income), and physical environment (e.g., air pollution). A composite Health Factor z-score was calculated as the weighted (30%, 20%, 40%, and 10%, respectively) average of the four Health Factor summary scores among all US counties, and k-means clustering was used to create unequally sized groups of counties with lower (‚Äúhealthier‚Äù) to higher (“less healthy”) z-scores. We considered the following cancer outcomes: cancer mortality, 2016-2020, for all types combined and for lung and colorectal cancer, individually, for Wisconsin counties (n=72). We fit age-adjusted negative binomial regression models with the Health Factor groups as the predictor variable and cancer mortality as the outcome to estimate rate ratios (RR) and 95% confidence intervals (CI). Compared to the 13 healthiest counties, the next group of 17 counties had an elevated risk of all cancers (RR 1.15, CI 1.08-1.22), lung (RR 1.21, CI 101-1.46), and colorectal cancer (RR 1.19, CI 1.06-1.34). The same was true for the next county group (n=23, all cancers RR 1.20, CI 1.13-1.28; lung RR 1.31, CI 1.09-1.57; colorectal 1.29, CI 1.15-1.45), and the 19 least healthy counties (all cancers RR 1.28, CI 1.19-1.37; lung RR 1.76, CI 1.45-2.13; colorectal 1.34, CI 1.18-1.53). In the future, we will replicate this approach for cancer incidence and other types of cancer, and for different states, geographic areas, and population groups. By applying the CHR model to cancer outcomes in this way, we can inform decisions regarding community-level priorities for cancer prevention and control interventions based on actionable determinants of health.

Historic Redlining and All-Cause Survival after Breast Cancer Diagnosis

Lima SM, Palermo TM, Lee FF, Insaf TZ, Meier HCS, Tian L, Taylor Jr. HL, Ochs-Balcom HM

Background: Historic redlining was a 1930s-era, federal residential segregation policy, in which neighborhoods were graded according to race, class, and land-use. Contemporary environmental and socioeconomic profiles of neighborhoods have been shown to differ according to historic redlining grades, thus historic redlining may contribute to current-day cancer disparities.

Objective: We evaluated whether overall 5-year survival differed according historic redlining grade in a cohort of breast cancer cases in New York State (NY).

Methods: This population-based cohort used data from the NY State Cancer Registry and included 60,773 breast cancer cases that were diagnosed 2008-2018 and resided in a census tract at diagnosis with a historic redlining grade. Cases were assigned a historic redlining grade (range A-D) through linkage to historic redlining score dataset by census tract. Cox proportional hazards models were used to estimate hazard ratios (HR) for 5-year survival associated with historic redlining grade and controlled for diagnostic characteristics, insurance status, and treatment. We evaluated models according to race/ethnicity, stage, subtype, and present-day neighborhood socioeconomic status (NSES). Cross-product terms assessed interaction.

Results: Approximately 18,288 (30.1%) breast cancer cases resided in a D-grade neighborhood. Five-year survival probabilities displayed a significant gradient with regard to historic redlining grade, with D-grade having the lowest survival (P log-rank <0.0001). In fully-adjusted Cox models, residence in a D-grade neighborhood was associated with 18% higher risk of death (HR= 1.18, 95% CI: 1.13, 1.23) compared to B-grade (P for trend <0.0001). Significantly elevated risk associated with D-grade was observed among non-Hispanic White and Hispanic women, local- and regional-stage disease, hormone receptor-positive and non-triple negative tumors, and across NSES quartiles. We found significant interaction for race/ethnicity and NSES.

Conclusion: Historic redlining, specifically D-grade, was associated with shorter 5-year survival among women with breast cancer in a large, diverse NY cohort. Future research on the role of contemporary NSES is needed to understand specific mechanisms and potential intervention points.

Land Use and Breast Cancer Incidence in California

Stahl, VE; Rainbow, R; Parada, H

Background: Zoning was created with the goal of protecting human health, yet hazardous land uses including industrial and high-intensity commercial zones remain prevalent in California (CA). Further, minorities are disproportionately exposed to environmental hazards due to factors related to environmental injustice. The relationship between zoning and breast cancer (BC) incidence, however, is not well understood, despite the potential for place-based environmental hazards to increase exposure to known carcinogens. Herein, we investigated associations between potentially hazardous and potentially beneficial land use designations and BC incidence rates in CA, overall and by race-ethnicity.

Methods: We obtained 10-year (2012-2021) age-adjusted incidence rates (aIRs) of female BC in CA by the medical service study areas (MSSAs) from CA Health Maps, a function of the CA Cancer Registry. We obtained 2021 zoning data for 535 of 539 jurisdictions from CA's Office of Planning and Research Statewide Zoning Database. Land use types were mapped and calculated as a percentage of total MSSA area in Geographic Information Systems using the overlap analysis function. We used multiple linear regression to examine the associations (βs and 95% confidence intervals, CIs) between the percentages of non-residential land use types in MSSAs and aIRs overall and by race-ethnicity.

Results: BC aIRs ranged from 49.1 to 181.2 per 100,000 women across the MSSAs. BC aIRs increased with increasing percentage of high-intensity commercial uses (β=1.41, 95%CI=0.19, 2.63; R2=0.04) and decreased with increasing percentage of industrial uses (β=-0.51, 95%CI=-0.26, -0.76; R2=0.04). By race, BC aIRs increased with the increasing percentage of agricultural uses (β=0.28, 95%CI=0.08, 0.48; R2=0.06) among Black women, and decreased with increasing percentage of open and public space uses (β=-0.14, 95%CI=-0.24, -0.04; R2=0.05) among non-Hispanic White women.

Conclusions: Land use is associated with BC incidence rates and may have differential impacts by race among women in CA. Our results suggest that non-Hispanic White women may benefit from the protective effects of zoning while Black women may suffer adverse effects of hazardous land use.

The Association of Home Owners' Loan Corporation (HOLC) Historical Redlining and Contemporary Cancer Incidence

Ton M, Canchola AJ, Alam A, Follis S, Hsing A, Hwang H, Schleicher NC, Henriksen LA, Gomez SL

Purpose: To determine whether there is an association between historically redlined neighborhoods and cancer incidence within the 8 Home Owners' Loan Corporation (HOLC) -graded cities in California. Historical structural racism, such as redlining, has been shown to have lingering and persistent effects on health disparities.

Methods: Data on lung, kidney, liver, pancreas, bladder, and oral cancers (n=42,544) were obtained through the California Cancer Registry data (2010-2019). To assess redlining, we used HOLC grades based on perceived mortgage investment risk (A=Best, B=Still desirable, C=Definitely declining, D=Hazardous "redlined") in the 1930s. HOLC grades were spatially assigned to census tracts where at least 50% of the land area intersects with a single HOLC. In California (population n=39,538,223 in 2019), these census tracts (n=1,094) resided within 8 major California cities: Fresno (n=542,248), Los Angeles (n=3,898,841), Oakland (n=440,669), Sacramento (n=524,925), San Diego (n=1,386,972), San Francisco (n=873,950), San Jose (n=1,013,241), and Stockton (n=320,806); thus analysis was limited to these cities. Poisson regression with robust variance estimation was used to calculate incidence rate ratios (IRRs) and 95% confidence intervals (CIs) for the association between census-tract HOLC grades (A, B, C, and D only) and census tract-, sex-, race/ethnicity-, and age group-specific cancer counts with population count as the off-set term, adjusting for individual (age, sex, race and ethnicity) and census tract-level factors (racialized income, neighborhood socioeconomic status, and gentrification), and clustering by census tract. We will also look at mediation by selected patient and socioeconomic status factors (race and ethnicity, neighborhood socioeconomic status).

Results: Redlined census tracts with hazardous grades (D) were associated with higher rates of lung (adjusted IRR: 1.21, 95% CI: 1.12, 1.31), liver (adjusted IRR: 1.58, 95% CI: 1.30, 1.93), pancreas (adjusted IRR: 1.16, 95% CI: 1.02, 1.31), and oral (adjusted IRR: 1.24, 95% CI: 1.07, 1.43) cancers.

Conclusions: The census tract-level HOLC grade was associated with cancer incidence. These results highlight historical and political determinants that advanced these place-based disparities.

Accuracy of Chemotherapy Ascertainment in SEER among Breast Cancer Survivors in a General Community Healthcare Setting

Corley ME, Vo JB, Mitra PR, Haas CB, Russo RG, Booker QS, Hurson AN, Curtis RE, Bowles EJA, Ryerson AB, Honda S, Feigelson HS, White L, Berrington de Gonzalez A, Gierach G, Veiga LHS

Purpose: Studies evaluating accuracy of breast cancer treatment data in the Surveillance Epidemiology and End Results (SEER) Registries have been limited by outdated data and lack of demographic diversity (mostly older age and non-Hispanic White patients). We captured chemotherapy in a racially diverse cohort within a general community healthcare plan linked to SEER and examined factors associated with SEER under-ascertainment.

Methods: We included 10,788 breast cancer patients (20,Äí84 years, stage 0,ÄíIII) from Kaiser Permanente (KP) Georgia (2004,Äí2019) and Washington (1990,Äí2016). We assessed SEER chemotherapy accuracy (kappa, sensitivity, specificity, positive predictive value [PPV], negative predictive value [NPV]) compared to KP electronic medical records and pharmacy dispensing (reference standard). We used multivariable logistic regression to assess factors associated with SEER under-ascertainment (false negatives: chemotherapy recorded in KP but not in SEER).

Results: 36% (n=3,631) of patients received chemotherapy and 3% (n=229) were under-ascertained in SEER. Overall, SEER chemotherapy approached perfect agreement (Kappa=0.91) with high sensitivity (94%), specificity (97%), PPV (95%), and NPV (97%), though these metrics varied by patient/tumor characteristics. Under-ascertainment increased with older age (p-trend=0.008), estrogen receptor [ER]+ vs ER- (OR=5.0, 95%CI:3.2-7.6), and with longer time from diagnosis to chemotherapy initiation (>90 days vs <60 days OR=3.6, 95%CI:2.4-5.4). Ascertainment was higher among patients diagnosed with advanced stages (III vs I; OR=0.5, 95%CI:0.3,Äí0.9), higher grade (III/IV vs I; OR=0.4, 95%CI:0.2-0.6), and among those receiving radiotherapy (OR=0.2, 95%CI:0.2,Äí0.3) or endocrine therapy (OR=0.1, 95%CI:0.07,Äí0.2). No significant differences were observed by race and ethnicity or surgery type. After 2004, there were improvements in SEER chemotherapy ascertainment over time (p-trend<0.001).

Conclusions: Ascertainment of SEER chemotherapy for breast cancer showed high accuracy in our study, with indications of improvement over time. However, variations in SEER chemotherapy under-ascertainment were noted by age, ER status, and time to initiation, highlighting potential areas for improvement.

Addressing Cancer Care Gaps Among Refugee Populations in the U.S.: A Comprehensive Scoping Review

Yeo S, Robles-Morales R, Ravi P, Abbker Z, Madhivanan P, McClelland J, Carvajal S, Coronado G.

Despite the unprecedented number of refugees worldwide and their distinct health needs, there remains a significant gap in understanding cancer prevention and control within this population, particularly in the United States, which has resettled more than 3.2 million refugees. Refugees in the U.S. face a higher prevalence of chronic diseases, limited awareness of preventive measures such as cancer screenings, and elevated risk factors and challenges such as high stress levels, infections associated with cancer, language barriers, and low health literacy. This scoping review aimed to systematically map the existing body of literature related to cancer care for refugees in the U.S. across the Continuum of Cancer Care framework, identifying knowledge gaps and providing directions for future research.Following guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) and the Joanna Briggs Institute Manual for Evidence Synthesis, our review focused on refugee populations, excluding other immigrant groups such as asylum seekers, due to their distinct characteristics and entitlement to services. Empirical studies of all designs were included if they covered any aspect of cancer care - prevention, detection, or treatment - in the U.S. refugee population. After an initial screening of 7,648 papers, 123 studies met the inclusion criteria and were assessed for eligibility. The findings revealed a disproportionate focus on certain aspects of cancer care. For example, while there is substantial research on cervical cancer screening, studies on colorectal cancer screening and the treatment phase of cancer care - such as curative treatment, symptom management, and survivorship - are notably lacking. Furthermore, there is an imbalance in the attention given to different refugee ethnic groups and geographic regions. This review highlights significant gaps in the current research landscape and provides critical insights for future studies to address the cancer-related health disparities faced by refugee populations, ultimately aiming to achieve health equity for all.

Rural-Urban Differences in Internet Access, Use, and Online Patient-Provider Communication among Cancer Survivors: A HINTS-SEER Analysis

Zahnd WE, Vanderpool RC., Blake KD, Nash SH, Gorzelitz JS, Senft N, Van Blarigan E

Purpose: To assess rural/urban differences in internet access and web-based patient-provider communication among cancer survivors.

Methods: We used data from the NCI Health Information National Trends Survey- Surveillance Epidemiology End Results (HINTS-SEER) survey, administered to cancer survivors from the Greater Bay Area, Iowa, and New Mexico cancer registries between January - August 2021. The survey included questions on internet access, patient portal use, and web-based communication between survivors and providers. Rural respondents resided in a county with an Urban Influence Code of 3-12 (1-2 for urban). To examine rural-urban differences, we calculated weighted percentages and Rao-Scott chi-square tests.

Results: The weighted percentage of rural respondents was 17.1% across the HINTS-SEER sample. Fewer rural respondents (78.7%) used the internet compared to urban (84.5%, p=0.03). Of those who used the internet, a smaller proportion of rural respondents were satisfied with their internet speed (79.9%) compared to urban (91.4%, p<0.001). There were rural-urban differences among cancer survivors in use of the internet to communicate with physicians, access test results, or make appointments, e.g., 47.1% of rural survivors used the internet to communicate with their physician in the past 12 months compared to 70.7% of urban survivors. Rural survivors were less likely to be offered access or be encouraged to access medical records online. Over half (51.4%) of rural survivors never accessed their medical records online in the past 12 months compared to nearly one-third (32.0%) of urban survivors who accessed their medical records at least 6 times.

Conclusions: Rural cancer survivors had less access to and use of satisfactorily high-speed internet, and, subsequently, used fewer web-based means to communicate with their providers and access their medical information. Beyond internet access, rural-urban differences in patient and provider preferences, digital literacy, and provider technology implementation may contribute to these differences. As digital technologies are increasingly used to monitor and manage cancer survivorship care, it is important to recognize rural-urban differences in access to and use of internet-mediated means of communication.

Evaluation of an Implementation Support Program for Rural Communities Using a New Two-Tiered, Embedded Evaluation Framework

Shin MB, Vu T, Masud M, Duran MC, Escoffery NC, Bishop S, Winer RL, Ko LK

Implementation Studio (the “Studio”) is a guided support program that builds capacity among community-based organizations (CBOs) to implement evidence-based interventions (EBIs) to increase cancer screening in communities experiencing disparities. Our aim was to evaluate the impact of the Studio on 1) implementation outcomes among leaders and community health workers (CHWs) across two rural CBOs and 2) assess changes in the breast and colorectal (CRC) cancer screening behaviors among their Latinx community members after receiving CBO-delivered EBIs.A two-tiered, embedded framework guided the evaluation. In Tier 1, we conducted surveys (n=38) and compared up-to-date breast and CRC screening pre/post-EBI delivery. In Tier 2, we conducted semi-structured interviews with CBOs and assessed implementation outcomes using Proctor’s Implementation Research Outcomes Framework and rapid qualitative analysis. All surveys and interviews were conducted in Spanish/English by phone/virtually from September 2022 to September 2023.Up-to-date with screening increased by 16.6% for breast cancer screening and 19.3% for CRC screening pre/post-EBI implementation. CBO participants (6 leaders and 7 CHWs) identified six implementation outcomes: acceptability, adoption, appropriateness, feasibility, implementation costs, and sustainability. CBO staff reported that participating in the Studio and implementing the EBIs cultivated confidence, built leadership skills and overall workforce capacity (acceptability). CHWs became proficient with EBIs and used the Studio tools (adoption). Participation in the Studio allowed CHWs to adapt the EBIs to improve fit for Latinx clients (appropriateness). Remote delivery increased accessibility of the Studio training and the EBI workshops for clients (feasibility). Key drivers of costs were CHWs’ time to adapt and implement the EBIs, and resources for remote delivery of EBIs (implementation costs). To enhance sustainable impact, the Studio and EBIs need to address clients’ social needs (sustainability). CBO-implemented EBIs increased up-to-date cancer screening among Latinx clients. Implementation Studio has the potential to build CBOs’ capacity to implement EBIs and increase cancer screening to address disparities in rural Latinx communities.

Best of ASPO Oral Presentation: Molecular Epidemiology, Cancer Risk, and Disparities

Transgender Menstrual Cycles, Hormones, and Breast/Chest Cancer Risk

Houghton LC, Baron A, Kosher R, Winkler I

Background: Currently, there is extensive investment in evaluating risk-based breast cancer screening for cisgender women; the absence of data for other sexual and gender minorities (SGM) is a major health inequity. We aim to use hormonal evidence to start to fill this gap.

Methods: We explore hormones and the menstrual cycle in transmasculine and transfeminine people to deepen the understanding of the hormonal etiology of breast cancer across genders and to inform screening guidelines. Through mixed methods across various studies, we have been characterizing 1) the menstrual cycle in transgender menstruators through interviews and vlogs; 2) gender-affirming hormone use in transfeminine and nonbinary people through 3-months of menstrual tracking, and 30-days of hormone measurement 3) and reviewing current hormone-based cancer screening guidelines for SGM.

Results: 1) Among transmasculine menstruators, we observed a range of menstrual experiences—dysphoria, tensions between femininity and masculinity, and transnormative pressures. For transfeminine participants some experienced cyclic patterns of menstrual cycle symptoms yet others expressed that menstruation doesn't define womanhood. 2) We detected higher levels of urinary estradiol in transfeminine people that take estrogens orally compared with those that inject estradiol. Participants reported PMS and cramping during periods of estradiol decline. These symptoms exhibit a 20 day cycle, which for one participant was gender affirming as they said "I felt like it was a cathartic cycle". Despite gender-affirming effects of hormones, hormones also elevate breast cancer risk. Current BC screening guidelines indicate that transgender people should follow cisgender guidelines, and some tailor the guideline for TG women who have used hormones for ≥5 years. However, there is no transgender-specific evidence supporting these guidelines.

Conclusion: Our triangulated results contribute evidence to inform gender inclusive breast/chest cancer screening guidelines to reduce the near 46-fold higher risk in transgender people compared to cisgender men. Given the lack of sexual orientation and gender identity data in cancer registries, we need more molecular evidence to advance equity in cancer screening for SGM populations.

Joint Roles of Proteomics and Neighborhood-level Predictors of de Novo Metastatic Prostate Cancer in Black and White Men

Jennifer Cullen, Tao Liu, Holly Hartman, Fangzhou Liu, Anood Alfahmy, Rini Ghosh, Ayesha Shafi, Christine Schoenholz, John Sumodi, Julia Payne, Randy Vince, Lee Ponsky, Greg MacLennan

Introduction: Striking racial disparities in prostate cancer (PCa) outcomes exist for American Black men, warranting significant efforts to identify early predictors of lethal PCa, and enhanced efforts to avoid over-treatment of clinically favorable disease with minimal risk of progression. Building on prior work, this study examined the independent and joint roles of proteomic markers and neighborhood-level social determinants of health (SDOHs) in predicting prostate disease aggressiveness in a racially diverse cohort of men undergoing prostate biopsy.

Methodology: A retrospective cohort study was conducted at University Hospitals (UH) in Cleveland, Ohio between January 1, 2005-May 2022.,ÄØ Medical chart review was performed to identify 300 Black and White men undergoing transrectal ultrasound-guided biopsy that revealed one of the following: (i) negative biopsy with a history of 1+ prior negative biopsy ("NEG"); (ii) biopsy-detected PCa of Gleason sum 6 ("GL6"); or (iii) biopsy-detected PCa with nodal and/or distant metastases at initial cancer detection ("METS"). Prostate biopsy tissues were obtained on each patient and targeted proteomics analysis was performed on 16 protein markers using mass spectrometry. Chi-square testing and Analysis of Variance (ANOVA) were used to assess associations between protein expression, census block group level SDOHs, and prostate biopsy result. Overall and race-stratified Machine Learning models were used to predict metastatic versus non-metastatic prostate biopsy result, as a function of protein markers, age at prostate biopsy, and census block-group level area deprivation index (ADI). Bonferroni correction was used to establish the threshold for the decision rule of statistical significance (alpha error 0.05/16 markers: $p< 0.0031$).

Results:,ÄØ ADI was strongly correlated with race but not with protein expression. Five proteins were found to predict METS in ML modeling, revealing distinct biological pathways for de novo metastatic prostate cancer.

Conclusions: Select proteomic markers were predictive of metastatic versus non-metastatic prostate biopsy result. These data can inform treatment risk stratification for men undergoing prostate biopsy.

Minority Travel Award Winner

Differences in DNA Methylation Markers Associated with Stress, Discrimination, and Socioeconomic Position among Cancers Survivors with and without HIV

Islam JY, Putney RM, Berglund A, Coghill AE

Background: Cancer survivors with HIV have worse survival compared to those without HIV, as well as accelerated biological aging. People with HIV (PWH) are a highly marginalized population. We evaluated differences in DNA methylation markers associated with stress and discrimination among cancer survivors with and without HIV.

Methods: To compare biological markers of stress, discrimination and socioeconomic position by HIV status, HIV-uninfected participants were matched to PWH by reported age, tumor site, tumor sequence number, and cancer treatment status. DNA from blood was assayed using Illumina MethylationEPIC BeadChip. We evaluated differential methylation at stress-related (i.e., NR3C1, BDNF, FKBP5) and inflammation-related (LRRN3) genes. We also evaluated differential methylation at inflammation-related pathways (CD1D, F8, KLRG1, NLRP12, and TLR3 genes) that are associated with adult socioeconomic position. To compare by HIV status, t-tests were performed on all probes on the EPIC methylation chip and false discovery rate (FDR) correction resulted in q-values based on all the hypothesis tests.

Results: We included 120 cancer patients overall (n=60 PWH) with a median age of 55 years (range: 51-60 years). PWH included 30% Black adults and 23% women, whereas those without HIV included only 3% Black adults and 47% women (chi-squared p<0.05). We observed statistically significant (q<0.05) differences in the methylation of probes in eight genes from the ‚Äòstress signature’ evaluation. The rate of differential methylation for cancer patients with HIV ranged from 33% of the 9 probes evaluated in the KLRG1 gene to 76% of the 17 probes evaluated for BDNF gene. After adjustment for race and sex, cancer patients with HIV remained significantly more likely to have higher methylation rates of probes located in NR3C1 (cg14438279; p<0.01), FKBP5 (cg07696519; p<0.01), BDNF (cg12021170; p-value=0.04, cg08760147; p-value=0.02), and NLRP12 (cg03524354; p-value=0.02).

Conclusion: We observed a higher burden of social epigenomic DNA methylation markers among cancer survivors with HIV. In the future, we will explore whether DNA methylation patterns of stress and discrimination may biologically contribute to poorer cancer prognosis and biological aging.

ASPO Travel Award Winner

Genetic Ancestry, DNA Repair, and Radon Exposure: Identifying Novel Lung Cancer Risk Factors in African Americans

Zakari M, Johnson S, James A, Ray M, Nsafoah A, Louis-Jacques A, Malak M, Aigboeghian EA, Mitchell KA

Purpose: Lung cancer is one of the most commonly diagnosed cancers and the leading cause of cancer-related death in the US and worldwide. African Americans (AAs) have higher lung cancer incidence rates when compared to European American (EAs), even in never smokers. Radon (a colorless, odorless, and tasteless carcinogenic gas naturally found in the environment) is the second leading cause of lung cancer in smokers and the leading cause in never smokers. The relationship between radon exposure and lung cancer has already been established. However, the molecular risk profiles of radon-associated lung cancers are not well defined; particularly in populations of African descent. Homologous recombination repair (HRR) genes effectively repair DNA double-strand breaks caused by radon and there are known lung cancer risk SNPs associated with high radon exposure. This study seeks to better understand genetic variations that could underlie the risk of developing radon-associated lung cancers.

Methods: Germ-line pathogenic variants (SNPs) in HRR genes based on ClinVar criteria were identified in unaffected genetic ancestry-defined study populations of African (Afr) (n=37,545) and non-Finnish European (Nfe) (n=622,057) descent in the Genome Aggregation Database (gnomAD). Annotation tools (SpliceA1, Pangolin, PhyloP, VEP, and CADD) were used to predict functional consequences. Candidate SNPs known to be associated with radon exposure and lung cancer risk were compared across populations.

Results: A total of 57 pathogenic SNPs across 10 HRR genes were specific to study populations of African descent, while 405 pathogenic SNPs were observed in 12 HRR genes in study populations of European descent only, suggesting the involvement of genetic ancestry. One pathogenic SNP was observed in both populations. Frameshift variants were the most common functional change in both Afr and Nfe populations. A radon-associated SNP (TSC2 rs2121870) was more likely to be found in African/AA individuals with local African ancestry at this genetic position compared to European ancestry.

Conclusion: Genetic susceptibility in DNA repair pathways and transcription factors may underlie lung cancer health disparities in AAs, partially caused by environmental exposures (such as radon).

Best of ASPO Oral Presentation:
Prevention and Screening Across Populations

ASPO Travel Award Winner

Body Composition and Incidence of Obesity-Related Cancers Among Adults in the Hispanic Community Health Study/Study of Latinos

Humberto Parada Jr, Pragnya Wanjerkhede,
Linda C. Gallo, Noe C. Crespo, Ilir Agalliu,
Andrew F. Olshan, Kelly R. Evenson, Thomas E. Rohan,
Amber Pirzada, Martha L. Daviglus, Gregory Talavera

Background: Obesity is highly prevalent among Hispanic/Latino adults affecting 45% of Hispanic/Latino adults, and is an established risk factor for at least 13 cancers. However, studies examining measures of body composition and cancer incidence in Hispanic/Latino adults are limited. Herein, we examined the associations between six measures of body composition and incidence of obesity-related cancers among Hispanic/Latino adults, overall, as well as by sex and by Hispanic/Latino heritage.

Methods: This prospective study enrolled 16,415 Hispanic/Latino adults of diverse heritage at baseline (2008-2011). Baseline measures of body composition included body mass index (BMI), waist circumference (WC), waist-to-height ratio (WHt), waist-to-hip ratio (WHp), fat mass index (FMI), and percent body fat (%BF). The incidence of 13 obesity-related cancers was ascertained through linkages of the HCHS/SOL cohort with four state cancer registries. We identified 381 incident obesity-related cancers diagnosed over a mean follow-up 10.7 years (5th percentile=7.4, 95th percentile=13.1 years). Survey-weighted Cox proportional hazards models were used to estimate covariate-adjusted hazard ratios (HRs) and 95% confidence intervals (95%CI) for the associations between each measure of body composition and latent class analysis-derived groups of body composition and obesity-related cancer risk.

Results:. Adjusted HRs for obesity-related cancers were elevated among adults with the highest levels of adiposity, and more so among women than among men. For example, a BMI ≥30 (vs. <25) kg/m¬≤ was associated with HR of 1.38 (95%CI=1.15-1.66) among all participants, and HRs of 2.83 (95%CI=1.49-5.37) in women and 0.51 (95%CI=0.24-1.10) in men (PInteraction<0.01). HRs also varied by Hispanic/Latino heritage; a 1-SD increase in WHp was associated with a HR of 1.03 (95%CI=0.72-1.46) overall, 1.39 (95%CI=1.07-1.78) among Cubans, and 0.70 (95%CI=0.51-0.96) among Dominicans (PInteraction<0.01).

Conclusions: Greater adiposity is associated with increased risk of obesity-related cancers, particularly among Hispanic/Latina women. Our findings suggest that efforts to reduce adiposity may be important for cancer prevention in Hispanic/Latino adults.

Electra Paskett Travel Award Winner

The Association of Health System-Level Factors with Lung Cancer Screening Uptake Varies by Race

Del Vecchio N, Burnett-Hartman A, Li C, Halm E,
Greenlee R, Tiro J, Honda S, Neslund-Dudas C, Oshiro C,
Breslau E, Rendle K

Purpose: Health system-level cancer screening initiatives can improve screening uptake, but additional research is needed to determine if the association of specific health system-level factors with cancer screening uptake varies by race.

Methods: Utilizing electronic health record data from 2018-2020 within the National Cancer Institute-sponsored Population-based Research to Optimize the Screening Process (PROSPR)-Lung consortium (five regional health systems), we identified individuals who were eligible for annual lung cancer screening (LCS) via low-dose computed tomography (LDCT). Information on health system-level factors was obtained via survey of key informants. Data included use of patient-directed strategies (outreach or automatic scheduling) and LCS-specific policies (guidelines, performance measures or incentives). Multivariable logistic regression was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) for the association of health system-level factors (separately) with receipt of LCS within an 18-month period, and to test for interactions with race and ethnicity.

Results: Analyses included 21,638 patients eligible for LCS with a mean age of 67; 55% were male, 4% Asian, 14% Black, 4% Hispanic, 72% White, and 6% another racial or ethnic group. Over 18 months, 23% received at least 1 screening LDCT. Care at health systems with patient-directed LCS strategies was associated with increased odds of screening overall (OR: 1.9, 95%CI: 1.7-2.1), and the magnitude differed by race. For example, the effect was stronger among White participants (OR: 2.2, 95%CI: 1.9-2.5) than among Black participants (OR: 1.3, 95%CI: 1.0-1.6) (interaction p-value <0.05). Care at health systems with LCS-specific policies were associated with increased odds of screening overall (OR: 1.9, 95%CI: 1.7-2.0), with differences in the effect size by race (White: OR: 2.0, 95%CI: 1.8-2.2, Black: OR: 1.3, 95%CI: 1.1-1.6) (interaction p-value <0.05).

Conclusions: Results suggest that health system-level factors are associated with screening rates overall, but the magnitude of the association varies by race and ethnicity, thus potentially widening disparities. Additional research is needed to develop multilevel interventions to increase uptake and equity in LCS.

Drivers of Variation in Human Papillomavirus Vaccination Rates among Adolescent Dependents within the Military Health System

Segel JE, Ramos ML, Zaorsky NG, Lengerich EJ, Chi G, Chetlen A, Luan WP, Calo WA

Purpose: To estimate the relative importance of family and provider factors in explaining geographic variation of HPV vaccination among adolescent dependents within the Military Health System (MHS).

Methods: Using 2007-2019 MHS Data Repository Data, we identified a sample of adolescents dependents of military service members who were continuously enrolled in TRICARE from age 9 to 13, 15, or 17 depending on outcome; and who had not been vaccinated by age 11. We estimated Kaplan-Meier curves of vaccination rates and estimated the effect of parent factors (rank, service branch) and catchment area factors (average per capita spending and fraction of care purchased from the private sector). We also used the random nature of military family moves to disentangle the relative importance of family and provide factors in explaining the observation variation in HPV vaccination rates. Specifically, we estimated the likelihood of adolescents unvaccinated at age 11 who moved from catchment areas with low (or high) vaccination rates to catchment areas with high (or low) vaccination rates as well as the impact of multiple moves on subsequent HPV vaccination rates.

Results: HPV vaccination rates were lower among adolescents of parents with more senior rank. Adolescents moving from lower HPV vaccination rate catchment areas to higher HPV vaccination rate catchment areas were significantly more likely to become vaccinated emphasizing the importance of provider factors in explaining variation in HPV vaccination. Adolescents experiencing multiple moves were significantly less likely to become vaccinated.

Conclusions: Adolescents who experience the disruption from multiple moves during adolescence are significantly less likely to receive HPV vaccination. Provider factors explain much of the variation in adolescent HPV vaccination rates within the MHS. Understanding successful approaches of high HPV vaccination catchment areas; and targeting interventions to families experiencing multiple moves during adolescence is critical to improving HPV vaccination within the MHS.

Racial/Ethnic & Geographic Trends In Uptake Of Non-Invasive CRC Screening From 2018-2022

Benavidez GA, Sedani AE, Owusu-Sekyere, E

Purpose: Multiple site-specific studies suggest that the use of stool-based tests for CRC screening increased during the COVID-19 pandemic. This analysis aimed to examine recent national trends in stool-based CRC screening usage and evaluate whether these trends differed between rural and urban populations and racial and ethnic groups.

Methods: We used data from the 2018, 2020, and 2022 Behavioral Risk Factor Surveillance System (BRFSS) to assess up-to-date CRC screening status among eligible U.S. adults. Based on self-reported screening modality, we determined the proportion of adults up-to-date with CRC screening who reported receiving a stool-based test. We calculated weighted prevalence estimates overall and stratified by county-level rural-urban classification and self-reported race/ethnicity. Survey-weighted multivariable logistic regression models were used to examine rural-urban and racial and ethnic disparities in stool-based CRC screening uptake.

Results: Among adults up-to-date with CRC screening, the proportion reporting completion of a stool-based test increased annually: from 25.96% in 2018, to 28.84% in 2020, and to 66.90% in 2022. Similar increases were observed across both rural and urban residents from 2018-2022. However, when examining rural-urban disparities, urban residents consistently had significantly greater odds of completing a stool-based test compared to their rural counterparts, with odds ratios of 1.30 (95% CI: 1.22, 1.34) in 2018, 1.63 (95% CI: 1.55, 1.67) in 2020, and 1.69 (95% CI: 1.64, 1.72) in 2022. Compared to white respondents, Black and Hispanic respondents had significantly greater odds of having received a stool-based CRC screening in 2018, 2020, and 2022.

Conclusion: This study shows a national increase in stool-based CRC screening from 2018 to 2022, with consistent trends across rural and urban areas. However, disparities persist, with urban residents having higher uptake than rural ones, underscoring the need for improved access in rural communities. Greater use of stool-based tests among Black and Hispanic adults compared to white adults may indicate barriers to accessing colonoscopy services. While non-invasive options have boosted screening rates, disparities in access to colonoscopy remain a concern.

Community Social Vulnerability Domains Have Distinct Influences on Treatment Selection for Men with Prostate Cancer

Washington SL, Wang L, Cowan JE, Nguyen HG, Carroll PR, Chan JM, Shariff-Marco S

Purpose: To evaluate the association between community social vulnerability index (SVI) and primary treatment for prostate cancer

Methods: Observational open cohort study of men diagnosed with biopsy-proven, clinically localized prostate cancer from 1998 to 2022 using a national study of 43 community urology practices, academic centers, and VA hospitals. Community social vulnerability, as defined by census tract-level multi-component rankings from 0 to 1 with >90th percentile deemed high, was appended to participants' geocoded addresses. SVI encompasses four domains (socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation). Prostate cancer treatment included prostatectomy, radiation, active surveillance/watchful waiting (AS/WW), primary androgen deprivation therapy (pADT), ascertained by treatment clinic. Multivariate multinomial logistic regression analyses examined associations between SVI and treatment selection, adjusted for demographics, socioeconomics, clinical, and tumor characteristics.

Results: These analyses included 9,023 men diagnosed with low (43%) or intermediate (42%) risk disease in community urology practices (91%); 47% had high community SVI. Half (59%) underwent prostatectomy, 23% radiation, 10% ADT, and 9% AS/WW. Median community SVI was 0.38 (IQR 0.17-0.66) with variable correlations between SVI domains ($r=0.21$-0.86, $p<0.001$). High community SVI increased odds of radiation (OR 1.56, 95% CI 1.39-1.77) or non-curative pADT (OR 1.51, 95% CI 1.27-1.79). High community SVI by racial and ethnic minority status significantly increased the likelihood of pADT (OR 1.60, 95% 1.61-2.19) compared to prostatectomy.

Conclusions: Community social vulnerability affects nearly half of men receiving prostate cancer care, despite access to community urology care, and independently increases the likelihood of non-surgical and potentially non-curative treatments of prostate cancer. SVI domains can provide specificity into actionable community characters that drive vulnerability and pinpoint communities for targeted, policy-focused interventions.

Cancer Screening Uptake and Social Vulnerability Across the Metropolitan-to-Frontier Continuum in the United States

Gibson BJ, Cromartie J, Brewer SC, Ceballos RM, Onega T, Doherty JA

Purpose: To assess whether frontier areas in the United States have lower cancer screening rates than metropolitan areas and whether associations vary by social vulnerability.

Methods: Census tract-level age-adjusted cancer screening rates and social vulnerability for 2018 were obtained from the CDC PLACES and CDC Social Vulnerability Index (SVI), respectively. Tracts were categorized as metropolitan, micropolitan, small town/rural, or frontier using the Integrated Metropolitan-to-Frontier Area Codes (tIMFAC), and SVI scores were divided into quintiles. Descriptive statistics for screening rates and SVI were reported by tIMFAC using median (interquartile range [IQR]) and frequencies (%), respectively. We calculated odds ratios (ORs) and 95% confidence intervals (CIs) using multilevel beta regression models with a random effect for county to evaluate associations between screening rates and tIMFAC, with metropolitan as the reference group. Unadjusted models were compared to those adjusted for SVI and stratified by SVI to examine how social vulnerability modified associations.

Results: Of 72,098 tracts with available data (681 had missing data), 3,597 (5.0%) were classified as frontier. Frontier areas had the lowest median screening rates for breast (73.6%), colorectal (61.7%), and cervical cancer (83.3%) compared to metropolitan areas (77.6%, 65.1%, 84.7%, respectively). Nonmetropolitan areas had lower odds of cancer screening than metropolitan, with frontier areas the lowest (breast (OR=0.94 95%CI 0.94-0.95), colorectal (OR=0.91 95%CI 0.89-0.92), and cervical cancer (OR=0.92, 95%CI 0.91-0.94)). Across all SVI quintiles, frontier areas had consistently lower odds of screening for breast, colorectal, and cervical cancer than metropolitan areas. Results were only slightly attenuated after adjusting for SVI, particularly for colorectal and cervical cancers (breast (OR=0.95, 95%CI 0.94-0.96), colorectal (OR=0.95, 95%CI 0.94-0.96), and cervical cancer (OR=0.96, 95%CI 0.95-0.97)). Frontier areas had consistently lower odds of cancer screening for breast, colorectal, and cervical cancer across all SVI quintiles.

Conclusion: Cancer screening for breast, colorectal, and cervical was lower in frontier areas than in metropolitan areas, regardless of social vulnerability.

The Impact of Food Access and Other Social Determinants of Health on Cancer Mortality in Florida

Herlihy SO, Yang JJ, Karanth SD, Guerra L, Vamsi KJ, Figg JW, Braithwaite D

Purpose: Research indicates that food environments significantly influence cancer mortality through structural and systemic factors, necessitating further exploration of the relationship between food access and cancer outcomes in the context of social determinants of health (SDOH).

Methods: We analyzed 2019 data from the US Department of Agriculture, County Health Rankings, and the Florida Cancer Data System. We conducted linear regression to model the relationship between food access and age-adjusted cancer mortality across all 67 Florida counties. Sensitivity analyses and interaction terms assessed the effects of SDOH and racial/ethnic diversity. Variables with under 3% missing data were imputed using county-level medians.

Results: Crude analysis showed a significant association between low food access and cancer mortality (coefficient [B] = 1.36, p = 0.03). The reduced model fit well (R2 = 0.82) and adjusted for poverty rates (B = 6.81, p <0.01), smoking prevalence (B = 9.38, p = 0.01), social connectivity (B = -6.64, p <0.01), physical inactivity, English proficiency, education, insurance coverage, income disparity, and severe housing issues. Food access did not have a significant association with mortality (B = 1.38, p = 0.16). In the sensitivity analysis, household income, diabetes prevalence, obesity prevalence, and primary care physicians per 100,000 people showed strong effects but did not significantly influence the regression model. Interaction terms underscored the influence of SDOH on mortality. Higher poverty rates were associated with increased mortality among Black individuals (B = 8.90, p <0.01), while Hispanic population proportion reduced this association (B = -4.9, p <0.01). Greater income disparity mitigated the negative impact of poverty on mortality (B = -4.27, p = 0.04). In contrast, higher rates of physical inactivity (B = 5.90, p <0.01) and smoking prevalence (B = 10.00, p <0.01) worsened the effects of poverty on mortality.

Conclusions: While low food access is associated with higher mortality, the interplay of SDOH is crucial for understanding this relationship and overall cancer mortality. These findings highlight the need to address food insecurity within a wider framework of socioeconomic factors to reduce cancer disparities.

The Impact of Expanding Neighborhood Measures of Poverty on Breast Cancer Mortality

Nwigwe IJ, Desjardins MR, Visvanathan K.

Purpose: To extend studies on poverty and cancer mortality by evaluating the combined impact of the adjacent neighborhood and the immediate neighborhood on breast cancer (BC) mortality using a novel approach.

Methods: The analytic population included women >= 20 years of age diagnosed with BC between 2005-2009 or 2010-2014 who survived >=1 from NCI SEER. Local spatial autocorrelation (LISA) analysis with Local Moran's I of five-year county-level poverty estimates from the American Community Survey was used to determine county-level neighborhood poverty environments. US counties with poverty above or below the national mean were high (H)- or low (L)- poverty counties, respectively, and represented immediate poverty environments. Adjacent poverty neighborhoods included H-counties among H-counties (HH), L-counties among HH-counties (LH), L-counties among L-counties (LL), and H-counties among LL-counties (HL). A Poisson regression model adjusting for age at diagnosis, race/ethnicity, cancer stage, year of diagnosis, treatment, and estrogen receptor (ER) status to assess the influence of immediate and surrounding poverty environments on BC mortality. Stratified and subgroup analyses explored the effect of ER status, stage, and race/ethnicity on BC death in immediate and adjacent poverty environments.

Results: In total, 4,528 women, 14,112 women, 4,338 women, and 1,092 women were in HH, LL, HL, and LH counties, respectively; with 2,262 overall BC deaths. Women from H-poverty surrounding environments (HH and LH counties) had a 1.25 [95%CI:1.15,1.38] relative risk of BC death, and women in H-poverty immediate environments (HH and HL counties) had a 1.14 [95%CI:1.05,1.25] relative risk of BC death when compared to women L-poverty surrounding (LL and HL counties) and immediate (LL and LH counties) environments, respectively. Subgroup analyses showed a higher risk of BC death in H-poverty surrounding environments than in H-poverty immediate environments for early-stage and ER+ BC.

Conclusion: Our findings demonstrate that accounting for poverty in the adjacent neighborhoods improves how we define disadvantaged neighborhoods. This information could inform the extent of intervention efforts and allocation of resources needed to improve BC outcomes.

Project HERO: A Randomized Trial of Tai Chi Qigong Versus Intensity-Matched Exercise and Usual Care for Fatigue in Older Male Cancer Survivors

Tundealao S, An J, Lin Y, Saraiya B, Lu S, Guest DD, Harding EM, Amorim F, Heidt E, Arana-Chicas E, Chen C, Boyce T, Kim IY, Arap W, Blair CK, Irwin MR, Kinney AY

Purpose: This study compared the efficacy of Tai Chi Qigong (TCQ) versus an exercise intensity-matched (EIM) intervention and usual care (UC) in older male cancer survivors with fatigue.

Methods: We conducted a three-arm randomized controlled trial where older (55+ years) male cancer survivors with cancer-related fatigue (CRF) participated in UC or one of two supervised group exercise programs: TCQ or EIM for 12 weeks. The TCQ intervention included deep breathing techniques, synchronized and eccentric movements, poses, and meditation. EIM matched TCQ's intensity, frequency, and duration with static, stretching, and eccentric movements. The UC group received standard care. Participants were followed up for 12 months. The primary outcome was patient-reported fatigue at 3-months post-intervention, measured via the Functional Assessment of Chronic Illness-Fatigue (FACIT-F) Scale. Mixed model analysis and linear contrasts were used to estimate and compare within- and between-group differences.

Results:,A cohort of men (n=113) were enrolled (mean age: 69.1 (¬ffl7.0) years). Primary outcome analysis (3 months following completion of the intervention) did not show significant within-arm (TCQ p=0.185, EIM p=0.523, and UC p=0.293) or between-arm differences in CRF (TCQ vs UC p=0.909, EIM vs UC p=0.642, and TCQ vs EIM p=0.0.664). However, the TCQ and EIM arms showed significant within-arm improvement in CRF immediately post-intervention (p=0.035 and p<0.001, respectively). There were no differences in class average attendance for either TCQ (78.4%) or EIM (76.8%). In an exploratory subgroup analysis, the TCQ arm demonstrated clinically meaningful improvements in CRF (≥3-point increase in FACIT-F score) compared to the UC arm at the 6-week mid-intervention and 1-week post-intervention assessments among patients receiving hormone therapy compared to those not receiving this treatment.

Conclusion: This study suggests that TCQ and EIM can improve CRF among older, fatigued male cancer survivors in the short term. However, the observed improvements were not sustained beyond the 12-week program, suggesting that long-term maintenance was not reached. Further testing is warranted in larger trials that include strategies to sustain both the behavior and the effects.

Risk of All-Cause and Disease-Specific Mortality in Relation to Cancer and Atherosclerotic Cardiovascular Disease

Mszar R, Spatz ES, Baldassarre LA, Hull SC, Cartmel B, Irwin ML, Ferrucci LM, Clasen SC

Purpose: Despite increasing evidence on the bi-directional association between cancer and atherosclerotic cardiovascular disease (ASCVD), little is known about differences in mortality rates among individuals living with both conditions. Therefore, we aimed to investigate the risk of all-cause and disease-specific mortality in a nationally representative sample of adults with and without a history of cancer and ASCVD in the United States.

Methods: We analyzed data from the National Health Interview Survey (2005-2018), linked to the National Death Index among adults aged ≥18 years. We used self-reported cancer history (excluding non-melanoma skin cancer) and/or ASCVD (including angina, stroke, myocardial infarction, and coronary heart disease) to classify individuals into four distinct disease groups. Multivariable Cox proportional hazards regression was used to calculate hazard ratios (HRs) and 95% CIs for all-cause, cancer-specific, and cardiovascular-specific mortality rates in those with cancer alone, ASCVD alone, and both conditions compared to those without these conditions.

Results: Among 402,939 individuals (median age 48.0 years; 55.4% female), 7.8%, 5.6%, and 1.5% had ASCVD, cancer, and both conditions, respectively. Adults with a history of cancer and ASCVD represented approximately 3 million individuals annually. After adjusting for covariates, individuals with both cancer and ASCVD had an increased risk of all-cause mortality (HR 2.20 [95% CI, 2.10-2.30]), cancer-specific mortality (HR 3.43 [95% CI, 3.14-3.75]), and cardiovascular-specific mortality (HR 2.42 [95% CI, 2.23-2.63]) compared to those with neither condition. Individuals with ASCVD and cancer alone also had increased risk of all-cause and cancer-specific mortality, while the latter group did not have a significantly higher risk of cardiovascular-specific mortality.

Conclusions: This large, nationally representative study with 15 years of follow-up showed that individuals with a history of both cancer and ASCVD had a significantly higher risk of all-cause and disease-specific mortality than those with neither condition. These findings highlight the need for increased monitoring and management strategies for this population, particularly in the setting of secondary prevention.

Second Cancer Risk among 1.9 Million Cancer Survivors

Pruitt SL, Rathod AB, Shahan K, Murphy CC

Purpose: Provide contemporary population-based assessment of second cancer risk among adolescents, younger adults, and middle age adult cancer survivors.

Methods: We identified persons (age 15-64 y) diagnosed with an invasive cancer of any type (hereafter, “index” cancer) between 1992 and 2021 using data from the Surveillance, Epidemiology, and End Results (SEER) program of cancer registries. We estimated standardized incidence ratios (SIR) over the 30 year follow-up period to quantify risk of second primary cancer among survivors beyond that expected compared to the general population. Analyses were conducted separately by sex, type of index cancer (34 types for men and 36 types for women), and age group, including adolescents (age 15-19 y), young adults (age 20-49 y), and middle-age adults (age 50-64 y). Risk was estimated for any second cancer.

Results: Of 1.9 million survivors, n=170,940 (8.9%) were diagnosed with a second cancer over the 30 year follow-up period. The most common second cancer types were leukemia (male adolescents), prostate cancer (male young and middle age adults), thyroid (female adolescents), and breast cancer (female young and middle age adults). Overall SIR was 1.09 (95% CI: 1.09, 1.10). Risk of second cancer varied by sex, age group, and type of index cancer. Second cancer risk was highest among adolescents compared to other age groups; for men the SIR was 4.32 (95% CI: 3.75, 4.96) and for women it was 3.19 (2.79, 3.64). Among male adolescents, second cancer risk was statistically significantly higher for n=15 of the 34 index cancer types compared to general population. Similarly, risk was higher for many cancers among young male adults (n=31) and middle-aged male adults (n=25). Among female adolescents, second cancer risk was statistically significantly higher for n=10 of the 36 index cancer types compared to general population. Similarly, risk was higher for many cancers among young women (n=32) and middle-aged women (n=26).

Conclusions: Nearly 1 in 10 cancer survivors will be diagnosed with a second cancer. We identified patterns of second cancer that can be used to inform risk-stratified survivorship care and future, evidence-based guidelines for screening and early detection.

Lifestyle Patterns and Sleep Disturbance in a Population-Based Cohort of Black Breast Cancer Survivors

Kudva A, Perlstein M, Sarkar S, Wang T, Zeinomar N, Jang MH, Gonzalez BD, Demissie K, Hong CC, Bandera EV, Qin B

Background: African American/Black breast cancer (BC) survivors experience higher rates of sleep disturbance compared to their White counterparts, which may contribute to poor survival and quality of life among Black BC survivors. However, modifiable factors, including lifestyle patterns affecting sleep disturbance following a BC diagnosis in Black women, remain largely unexplored.

Objective: The study evaluates whether a healthier lifestyle, according to current cancer-related lifestyle guidelines, is associated with a lower risk of sleep disturbance in a population-based cohort of Black BC survivors, the Women’s Circle of Health Follow-Up Study.

Methods: Pre-diagnosis lifestyle factors (adiposity, physical activity, intake of fruits, vegetables and fiber, ultra-processed foods, red/processed meat, sugar-sweetened drinks, and alcohol consumption) were assessed during the baseline home visit among 682 participants. Lifestyle pattern scores were calculated using the World Cancer

Research Fund/American Institute for Cancer Research standardized scoring system (range: 0-7, with higher scores indicating greater adherence to the recommendations) and are consistent with American Cancer Society guidelines. Sleep disturbance was assessed during a home visit approximately 2 years after diagnosis using the Pittsburgh Sleep Quality Index (PSQI), with a PSQI score >5 indicating clinically significant sleep disturbance. Robust Poisson regression was used to estimate the incidence rate ratio (IRR) and 95% confidence interval (CI) for the association between lifestyle pattern scores and sleep disturbance.

Results: The mean (SD) pre-diagnosis lifestyle pattern score was 2.96 (1.10), and 59.8% of Black BC survivors had clinically significant sleep disturbance. Compared to women in the lowest quartile of lifestyle pattern score (0-2.25), those in the highest quartile (≥4) had a 21% lower risk of sleep disturbance (IRR=0.79, 95% CI: 0.65, 0.97; p for a 1-point score increase: 0.01) after adjusting for age, education, income, insurance, and cigarette smoking. The results were not modified by age, smoking status, tumor subtype, or stage.

Conclusion: Adherence to current cancer-related lifestyle guidelines may reduce the risk of sleep disturbance among Black BC survivors.

Exposure to Air Pollution and the Risk of Ovarian Cancer: A Parallel Analysis of Five Large US Prospective Cohorts

White AJ, Hart JE, Quraishi S, Bookwalter DB, Sweeney MR, O'Brien KM, Neuhouser ML, Whitsel EA, Kaufman JD, Tworoger SS, Laden F, Sandler DP

Purpose: Air pollution has been related to a higher risk of cancers including breast and lung, but few studies have evaluated the association with ovarian cancer, a rare but often deadly gynecologic tumor with few established risk factors.

Methods: Residential exposures to nitrogen dioxide (NO2), fine particulate matter (PM2.5), and ozone were estimated for participants in the Nurses' Health Studies, the Women's Health Initiative Clinical Trials and Observational Study Cohort, and the Sister Study using spatio-temporal air pollution exposure models. We used Cox proportional hazards regression to determine cohort-specific hazard ratios (HRs) and 95% confidence intervals (CIs) for the association between time-varying 24-month average NO2 (10 ppb), PM2.5 (5 ¬µg/m3), and ozone (10 ppb) with incident ovarian cancer with follow-up from 1990-2016/2017, adjusting for age, calendar time, census region, neighborhood socioeconomic status, race and ethnicity, education and randomization arm for the clinical trial. Restricted cubic splines were used to evaluate the linearity of pollutant associations. Summary estimates were calculated overall and by menopausal status and tumor histotype (serous, endometrioid, mucinous, clear cell) using a random effects model.

Results: Participants were followed for a mean of 17.3 years. We did not observe associations for any air pollutant with ovarian cancer incidence overall (NO2: N=2,600 cases, HRmeta=0.97, 95% CI: 0.90-1.05; PM2.5: N=1,865 cases, HRmeta=1.01, 95% CI: 0.91-1.12; ozone: N=2,600 cases, HRmeta=1.04, 95% CI: 0.92-1.16) or by tumor subtype. Restricted cubic spline analysis supported linear associations. In stratified analyses, we observed a suggested positive association with PM2.5 among premenopausal cases (N=126 cases; HRmeta=1.86, 95% CI: 0.95-3.67).

Conclusions: In this largest study to date with outdoor air pollution exposure over an average of 17 years of follow-up, air pollution was not strongly related to ovarian cancer incidence, except perhaps a suggested role for PM2.5 in younger women. Despite the large sample size, subtype and subgroup analyses had limited statistical power indicating a need for continued efforts to pool data from multiple studies.

Carcinogenic Industrial Air Pollution and Endometrial Cancer Risk in a Large Prospective U.S. Cohort

Ammons S, Fisher JA, Applebaum KM, Clarke MA, Madrigal JM, and Jones RR

Purpose: Endometrial cancer (EC) incidence is increasing in the general population, but environmental risk factors for EC are greatly understudied. We aimed to evaluate the association between carcinogenic industrial air emissions and EC in a large U.S. cohort.

Methods: We used the U.S. Environmental Protection Agency's Toxics Release Inventory of industrial point sources to estimate historical exposure to airborne emissions (1987-1995) for eleven chemicals and metals classified as known human carcinogens by the International Agency for Research on Cancer for 116,380 female participants in the NIH-AARP Diet and Health Study (enrolled 1995-1996). For each carcinogen, we constructed inverse distance- and wind direction-weighted average emissions index (AEI) exposure metrics within 3, 5, and 10 km of participants' enrollment address. We used Cox regression to estimate Hazard Ratios (HR) and 95% Confidence Intervals (CI) for associations of tertiles (T) of exposure (compared to non-exposed) with incident EC, adjusted for state, age, race and ethnicity, body mass index, neighborhood-level socioeconomic deprivation, and smoking status and intensity. We mutually adjusted for correlated emissions (rho≥0.3).

Results: A total of 3,088 EC cases were diagnosed through 2018. We observed an increased risk of EC associated with the highest benzene exposure at 3km (HR T3.vs.non-exposed:1.44; 95%CI:1.03-2.01; p-trend=0.03), and the association weakened with increasing distance between benzene-emitting facilities and participant residences (5km HR T3.vs.no-exposed:1.33; 95%CI: 1.05-1.68; p-trend=0.02; 10km HR T3.vs.non-exposed:1.11; 95%CI: 0.93-1.32; p-trend=0.49). We also observed positive, but imprecise associations with arsenic, asbestos, ethylene oxide, cadmium, trichloroethylene, 1,3 butadiene, and nickel emissions at 10km but not within shorter distance thresholds. We found no associations for formaldehyde, o-toluidine, and vinyl chloride.

Conclusions: Our novel findings suggest that industrial emissions of benzene may be associated with increased endometrial cancer risk for people living near industrial sources. Expanding future research to include more geographic areas and a greater number of endometrial cancer cases would help clarify these relationships.

Per- and Polyfluoroalkyl Substances in Drinking Water and Cancer Prevalence in the United States

Karasaki S, Phipps AI, Iyer HS, Jones RR, VoPham T

Purpose: Research on the adverse health effects of per- and polyfluoroalkyl substances (PFAS) continues to grow. With the recent releases of nationwide data on PFAS in drinking water (via the Environmental Protection Agency [EPA] Fifth Unmonitored Contaminant Rule [UCMR5]) and water system boundaries (from the EPA), it is now possible to conduct nationwide geospatial analyses on the relationships between PFAS in drinking water and health. This study examined the associations between PFAS in drinking water and cancer prevalence.

Methods: We examined cancer prevalence in the United States (i.e., proportion of adults in 2022 ≥18 years diagnosed with cancer, excluding non-melanoma skin cancer) at the census tract level using the Centers for Disease Control and Prevention Population Level Analysis and Community EStimates (PLACES) dataset. We obtained sampling data for PFAS in drinking water from UCMR5 (2023-ongoing), a routine nationwide sampling of select unregulated contaminants required by the Safe Drinking Water Act. We used geographic information systems to spatially join water system boundaries (n=6,215) with PLACES census tracts applying areal weighting. We used Poisson regression to calculate prevalence ratios (PRs) and 95% confidence intervals (CIs) for associations between PFAS in drinking water and cancer prevalence, adjusted for census tract-level sociodemographics, health conditions and behaviors, and socioeconomic status.

Results: This analysis included 58,947 census tracts, with an average cancer prevalence of 7.6%. We observed positive associations between higher PFAS levels in drinking water for PFBA, PFHpA, PFHxA, PFHxS, PFOA, and PFOS and increased cancer prevalence ($p<0.0001$). The strongest association was observed for PFHpA (adjusted PR highest tertile [0.005-0.031 μg/L) vs. samples under the minimum reporting level [0.003 μg/L]: 1.16, 95% CI 1.13-1.19, $p<0.0001$). No associations were observed for PFBS and PFPeA. Models mutually adjusted for correlated PFAS showed generally similar results.

Conclusions: Higher levels of certain PFAS in drinking water were independently associated with increased cancer prevalence. As the EPA continues to regulate PFAS and collect data, future research should examine PFAS with cancer incidence outcomes.

Environmental Heavy Metal Exposure and Urological Cancer Risk: A Systematic Review and Meta-Analysis of Case-Control and Cohort Studies

Deng Z, Li J, Ji R, Delgado J, Kachuri L, Cardenas A, Graff RE, Leppert JT, Dennis L, Chung BI, Langston ME

Purpose: This study aimed to evaluate associations between multiple environmental heavy metal exposures and urological cancer risk.

Methods: We conducted a systematic review and meta-analysis of published cohort and case-control studies available from online databases as of June 13th, 2024. Studies that reported on at least one analysis of association between a contaminant heavy metal (arsenic, cadmium, lead, mercury, manganese, nickel, cobalt, and chromium) and the risk of individual or overall urological cancers (prostate, bladder, kidney, upper tract (UTC, renal pelvis and ureter), testicular, and urethra cancer) were included. Two authors independently performed preliminary screening and data extraction. We used random effects meta-analysis with robust variance estimation to estimate pooled relative risks (RRs) for tertiles of heavy metal exposure.

Results: Among 18,501 screened studies, we identified 53 studies for systematic review, including 48 studies for meta-analysis. Heavy metals were measured in various sources, including drinking water, diet, ambient air, blood, urine, and toenails. Comparing top versus bottom tertiles of arsenic exposure, we observed a 95% increased risk of overall urological cancer (RR=1.95, 95%CI:1.37-2.51), a 68% increased risk of bladder cancer (RR=1.68, 95%CI: 1.25-2.27), and a more than 3-fold increased risk of UTC (RR=3.37, 95%CI: 1.85-6.15). We did not observe statistically significant associations for prostate (RR=1.07, 95%CI: 0.95-1.21) or kidney cancer (RR=1.38, 95%CI: 0.84-2.27). Comparing top versus bottom tertiles of cadmium exposure, we observed a statistically non-significant 70% increased risk of overall urological cancer (RR=1.70, 95%CI: 0.98-2.94). This association was statistically significant for kidney cancer, bladder cancer, and UTC combined (RR=2.31, 95%CI: 1.27-4.20), but not for prostate cancer (RR=1.13, 95%CI: 0.74-1.74). There have been limited studies for other heavy metals and other urological cancers.

Conclusions: Environmental exposure to arsenic and cadmium might be associated with an increased risk of urological cancer and particularly of bladder cancer and UTC. Additional studies are needed to investigate other contaminant heavy metals and other urological cancer types.

T denotes trainee submission.

Sunday, April 6, 2025

Cancer Health Disparities

1

A New Financial Mechanism Resulted in Statewide Increase in Colorectal Cancer Screening

Jaclyn M. Hall, Rahma S. Mkuu, Curtis Warren, Peyton A. Lurk, Christopher R. Cogle

Background: Colorectal cancer (CRC) is the 2nd deadliest cancer in the United States and can be prevented via screening. Screening rates dropped drastically in 2020. To make up for screenings missed during the early part of the COVID-19 pandemic, a new healthcare financing policy was offered to FL Medicaid health plans. Each health plan that successfully screened at least 50% of their CRC screening-eligible enrollees could earn alleviation of their 2022 liquidated damages, which were $30 million in fines levied by the state for not meeting other contracted quality performance measures. We aimed to determine if incentivizing Medicaid health plans in this manner significantly increased colorectal cancer screening.

Methods: For this cross-sectional study, we analyzed claims-based data of eligible Florida Medicaid enrollees during the screening initiative period (Oct. 1, 2022- June 30, 2023) and pre-initiative period (Oct. 1, 2021, to June 30, 2022)—the same nine-month period in the previous year. Enrollees 45 to 75 years old were eligible to be included in the study cohort if they were enrolled in Medicaid for 12 continuous months, deemed non-frail, and were not up-to-date with colorectal cancer screening guidelines on October 1st. All nine Florida Medicaid health plans agreed to participate in the pilot.

Results: At the end of the financial pilot period, 51.3% of the eligible enrollees had been screened by one of the recommended screening modalities in the proceeding 9-months, an increase of 11.8% over the same 9-month period a year earlier. The screening initiative statistically increased the rate of CRC screening in eligible enrollees who were not up-to date with screening, X2(1, N = 186,197)= 769.6, p < 0.001, with a 31% increase for the 44-55 age group and almost doubling of the use of Cologuard(RT).

Conclusions: Multilevel interventions to minimize barriers should include the health plan level. Health plans can play a crucial role by utilizing their data to identify underserved populations and building lasting partnerships, leading to more systemic improvements in access and utilization. Financially incentivizing health plans through the alleviation of liquidated damages can lead to increasing CRC screening rates in a vulnerable population.

2-T

A Novel mHealth Intervention (PRISM) to Increase Colorectal Cancer Screening Knowledge in Young African American Men

McGill C,Thomson MD, Keen L, Palesh O

Purpose: Colorectal Cancer (CRC) disproportionately affects African American (AA) men who have the lowest rates of CRC screening adherence, which results in higher mortality rates. Additionally, the incidence rates are steadily increasing in younger individuals (< 45 years of age) who are not routinely screened.

Method: Prevention, Risk assessment In young adults for colorectal cancer Screening in Minorities (PRISM), a culturally tailored, self-paced mHealth app intervention for young AA men was developed to improve CRC outcomes. 20 AA men between the ages of 18-25 who resided in Petersburg, VA accessed the app. Petersburg is considered a national hotspot for CRC cases with both incidence (45 vs. 39 per 100,000) and mortality (16 vs. 14 per 100,000) rates higher than the US averages.

Results: In this study, 11/20 of participants were working full-time and 15/20 reported having healthcare coverage. 15/20 of participants had high school education and the rest had an Associate's degree or higher. 9/20 of participants reported they were unsure of whether they would get screened for CRC. 14/20 participants stated that they read health information only once a month or less in the past 12 months. CRC knowledge was measured using the Knowledge Attitude and Practice (KAP) pre and post intervention (KAP <20.5 suggests poor CRC knowledge). There was a significant increase (p<0.001) in CRC knowledge post intervention, where participants reported a poor baseline CRC knowledge (M=15.95, SD= 4.74) compared to much improved CRC knowledge post PRISM (M= 26.85, SD = 2.30). There was significant increase (p<0.01) in participants' willingness to speak with family members post intervention about CRC.

Discussion: CRC interventions exist for older individuals, yet none have been tailored to use as a preventative tool specifically for young AA males living in "hot spots" for CRC.

Future research needs to replicate the findings in a larger sample and investigate the impact of this intervention on longer term outcomes.

3-T

A Pathway Toward Equity: Addressing the Unintended Racial and Socio-Economic Disparities in Tobacco Use among Adolescent and Young Adult Cancer Survivors

Bates-Pappas GE, Chichester L, Hernv°ndez-Torres R, Kotsen C, Ostroff J

Purpose: Despite the potential health risks and disproportionate use of non-cigarette tobacco products (OTPs) —such as cigarillos, pipes, and e-cigarettes among adolescents and young adults (AYA) from marginalized communities, there is a paucity of research in this area. The purpose of this study is to explore the prevalence of cigarette and OTP use among AYA patients diagnosed with cancer, focusing on differences by race/ethnicity, and examining contextual factors that may elevate the risk of lung cancer.

Methods: We conducted a retrospective cohort analysis of AYA patients diagnosed with cancer and treated at MSK from 2020-2023. Descriptive statistics were used to describe the frequency of demographic characteristics and tobacco use. Chi-square tests were performed to evaluate differences in tobacco use prevalence by race/ethnicity, and contextual factors.

Results: Among the 15,180 AYA patients aged 18-39 seen during the study period (66.3% female and 33.7%) male, age 32.6 [SD 5.4 years, the prevalence of current tobacco use was 7.5% (n=1,147) and varied significantly by race/ethnicity (X2 = 45.105, p<0.0001) with Black/African American (B/AA) patients reporting the highest rate, 10.2%, followed by 9.1% Hispanic/Latinos, and Non-Hispanic White patients reported tobacco use of 7.2%. The majority 87.2% of AYA patients reported using OTP while 12.8% reported using cigarette only, no significant differences observed by race and ethnicity. More than 25% of minoritized AYA patients live in lung cancer hotspot (e.g., high rates of lung cancer diagnosis) and 30% of AYA patients reported living with at least one other tobacco users.

Conclusions: These findings demonstrate that assessing patients' history of OTP use is just as important as cigarettes since patterns of use and the type of product used differ within these communities. Developing tailored tobacco cessation treatments to help AYA patients with cancer achieve and maintain tobacco use abstinence is important for reducing tobacco-related disparities. The consequences of not addressing this gap will be an exacerbation of cancer related disparities among AYA patients and survivors.

4-T

A Scoping Review Exploring Social Risk Factors in Cancer Care Delivery

Ochoa-Dominguez CY, Telles VM, Sanchez JI, Adjei BA, Arizpe A, Worthy A, Sabater-Minarim D, Banegas MP

Purpose: This scoping review sought to summarize and analyze research focused on the relationship between cancer care delivery and three social risk factors: food insecurity, housing instability, and transportation challenges.

Methods: Articles published from 2010 to 2023 were retrieved from six databases: PubMed, Scopus, Cochrane Library, CINAHL Plus, EMBASE, and PsycINFO. This review's inclusion criteria were original research published in English that targeted cancer patients in the United States, emphasizing social risk factors and cancer care delivery. Data selection and screening were conducted in two stages: (1) title and abstract review and (2) full-text evaluation, conducted by two independent reviewers. Discrepancies regarding study inclusion were resolved via weekly team discussions. A database was created, encompassing five categories: 1) publishing information, 2) study design, 3) study population and multilevel factors assessed, 4) study characteristics, and 5) study results and discussion key points.

Results: We identified 10,032 studies, where 304 met our eligibility criteria. Among the eligible studies, the most frequently addressed social risk factor was transportation barriers (91.5%), followed by food insecurity at 6.7% and housing insecurity at 3.7%. Most studies focused on older adults (65 years and older), and nearly half did not focus on a specific health disparity population. Across the cancer continuum, most studies focused on the active treatment phase (48%), followed by surveillance (29%), survivorship (10%), and diagnosis (10%). Based on the NASEM health care system activities that strengthen social care integration, 85% of studies focused on Awareness, 10% on Adjustment, and 5% on Assistance.

Conclusion: Our scoping review highlights that transportation was the most assessed social risk factor in cancer care delivery research, while food insecurity and housing instability were understudied. Studies primarily focused on awareness, such as screening for social risks; however, it is crucial to integrate resource referrals to support services or social interventions into cancer care delivery. Additional research examining community-level strategies is needed to mitigate the social factors contributing to the unequal burden of cancer.

5

A Scoping Review of Residential Economic Investment Disparities and Cancer

Klassen AC, Henry KA, Wiese D, Keith S, Hiller A, Li K, Zeigler-Johnson C

Purpose: As an extension of well-developed research in neighborhood-level drivers of health disparities, more recent work investigates the impact of both historical and current bias in residential economic investment on a range of health outcomes. The goal of our scoping review was to summarize the current state of the evidence regarding residential economic investment bias and cancer disparities.

Methods: The scoping review focused on three constructs currently used in the health disparities literature to assess neighborhood-level economic investment differences: racial and geographic bias in current mortgage lending practices, residual effects of historic mortgage investment "red-lining" by the 1930's Home Owners' Loan Corporation, and gentrification of neighborhoods through economic re-investment and potential displacement of residents. Searches were conducted using paired terms of "cancer" with "redlining", "mortgage lending bias", and "gentrification." For each study, we examined: cancer sites, disease characteristics or outcomes, geographic area, source of cases, selected economic indicators, their operationalization and measurement, and findings.

Results: We have initially examined 18 site-specific analyses across 14 publications. Only one analysis focused on all cancers combined, and except for one analysis including cervical cancer, none examined individual cancers beyond the "big four" sites, leaving roughly half of incident cancers under-explored. Breast cancer was the most well-studied (9 analyses), with fewer analyses of colorectal (3), lung (3) and prostate (1). Outcomes focused across the cancer control continuum, including screening, stage at diagnosis, access to treatment, receipt of guideline-concordant care, survival or mortality, as well as tumor markers and disease characteristics. Most studies did not fully adjust for other socioeconomic and demographic influences. However, most support associations between the three constructs related to bias in residential economic investment and negative cancer health impacts.

Conclusions: Building from these initial studies of association, research should broaden cancer types, examine possible mechanisms, and compare across geographies, to inform possible economic policy solutions.

6

ACCSIS Appalachia: Results of an Implementation Science Project to Increase Colorectal Cancer Screening in Appalachia

Paskett ED, Pennell ML, Kruse-Diehr AJ, Oliveri JM, Cromo M, Huang B, Stephens J, Walunis J, Dignan M

As part of the NCI MoonshotSM Initiative, Accelerating Colorectal Cancer Screening and Follow-up through Implementation Science (ACCSIS), we randomized rural primary care clinics in Appalachian Ohio and Kentucky, where colorectal cancer (CRC) mortality rates are elevated, to early or late intervention in staggered group randomized design (2018-2023). Year 1 focused on qualitative assessment to guide adaptation and bundling of multi-level (patient, provider, system) evidence-based interventions (EBIs) for CRC screening to be implemented at each individual clinic (N=8) during the active intervention period (18 months). EBIs included the following strategies: at-home test distribution and screening reminders (patient-level), educational presentations and assessment with feedback (provider-level), and patient navigation and a tracking system for abnormal test results (system-level). A sustainability period followed for 1-3 years, depending on assigned arm. The main outcome was the percentage of patients aged 50-75 years screened within guidelines based on yearly aggregated screening rates reported by clinics at baseline, year 1 (end of active implementation in early intervention clinics), and year 2 (end of active implementation in delayed clinics). There was a marginally significant increase in the CRC screening rate among the early intervention clinics over their active intervention period (45.7% to 52.2%, absolute difference, 13.6%; 95% CI, -0.1%, 27.3%, p=0.051). This rate was not different from the delayed clinics over the same time (p=0.11), nor did the delayed clinics increase screening rates during their active intervention period (44.6% to 44.7%). While this study reached patients in underserved areas and increased screening rates in some clinics, there were some challenges. Most notably, the COVID pandemic began in 2020 when clinics were starting active intervention, resulting in 3 pauses (cumulatively 12 months) to allow clinics to resume operation. Screening rates were only available by calendar year, and data were not complete for all clinics. Nevertheless, we obtained important information about how to implement bundled EBIs in underserved health settings. Future work should assess readiness in primary care clinics prior to implementation.

7-T

Adherence to Breast Cancer Screening Adherence Guidelines among U.S. Women: Findings from NHIS 2021

Chandra M, Fokom-Domgue J, Yu, R, Shete, S

Purpose: Despite the proven benefits of early breast cancer detection, adherence to the United States Task Force screening guidelines in the US is suboptimal. This study assessed behavioral and demographic factors associated with adherence to breast cancer screening guidelines.

Methods: We used the most recent nationally representative data on breast cancer screening adherence, the National Health Interview Survey 2021, to assess breast cancer screening adherence among 6814 US women aged 50-74. To identify associated factors, we conducted a population-weighted multivariable logistic regression analysis.

Result: Our study found that 76.3% of eligible US women adhered to breast cancer screening guidelines. Asians [AOR: 0.56 (0.39-0.78), p<0.001], current smokers [AOR: 0.61(0.49-0.75), p<0.001], individuals with educational attainment less than high school [AOR: 0.62(0.47-0.83), p<0.001] and high school or GED [AOR: 0.79 (0.66-0.95), p= 0.012], individuals who are single, widowed, separated or divorced [AOR: 0.71 (0.61- 0.82), p<0.001], and uninsured [AOR: 0.24 (0.18- 0.33), p<0.001] were less likely to be adherent to breast screening. Cancer survivors were 46% [AOR:1.46 (1.19-1.78), p<0.001] and non-Hispanic Blacks were 75% [AOR:1.75 (1.34-2.27), p<0.001] more likely to adhere to screening guidelines. Women were also less likely to adhere if they did not have a routine checkup in the past 2 years and had poor perceived health.

Conclusion: Lower breast cancer screening adherence was found to be associated with Asian race, current smoking, lower level of educational attainment, marital status, insurance status, and perceived health condition. The breast cancer screening uptake was higher among cancer survivors and non-Hispanic Blacks. Targeted interventions such as raising awareness of breast cancer risks in smoking cessation programs, encouraging and equipping healthcare professionals to use culturally tailored interventions, and community education about breast cancer and its prevention will help increase breast cancer adherence among US women.

8-T

Age-Period-Cohort Analysis of Neighborhood Disadvantage and DCIS Breast Cancer Incidence Rates among Non-Hispanic Black and White Women Using SEER-17 with Census-tract Attributes

Booker QS, Shah K, Rosenburg P, Filho AM, Vo JB, Shign JZ, Gretchen G, Figueroa JD

Background. Non-Hispanic Black (NHB) women, among the most impoverished in the US, have the highest breast cancer-specific mortality rates. If this disparity results from low early detection, we expect NHB women to have the lowest ductal carcinoma in situ (DCIS, stage 0) incidence rates, irrespective of socioeconomic status (SES).

Methods. We identified 135,013 women diagnosed with primary DCIS breast cancer, ages 40-74 years, between 2006-2019 using the Surveillance, Epidemiology, and End Results-17 registry linked to census-tract attributes. Age-period-cohort models (1) estimated age-standardized incidence rates (ASIR) per 100,000 women by race, ethnicity, and census-tract level SES (Yost index: quintile 1 [lowest SES]-5 [highest SES]) and (2) calculated net drifts (average annual percentage change AAPC), local drifts (AAPC/age-group), period-specific incidence rate ratios (IRR), and birth cohort-specific IRR. We report DCIS IRR for the lowest vs highest SES quintile within and between NHB and non-Hispanic White (NHW) women.

Results. NHB women consistently had the highest DCIS rates across all SES groups (lowest SES ASIR= 46.6, 95% CI [37.8, 55.3]; highest SES ASIR= 65.4, 95% CI [49.0, 81.8]). DCIS rates had a positive relationship with SES in NHW women (lowest SES ASIR= 35.9, 95% CI [30.7, 41.1]; highest SES ASIR= 56.6, 95% CI [53.4, 59.9]). NHB (IRR= 0.71, 95% CI [0.53, 0.96]) and NHW (IRR= 0.63, 95% CI [0.55, 0.73]) women living in the lowest SES quintile were significantly less likely to be diagnosed with DCIS than their counterparts living in the highest SES quintile. Among women residing in the lowest SES quintile, NHB women were more likely to be diagnosed with DCIS than NHW women (IRR= 1.30, 95% CI [1.02, 1.64]). No age, period, or birth cohort differences were observed.

Conclusion. NHB women had the highest DCIS rates, regardless of SES. For both NHB and NHW women, DCIS rates increased with increasing SES. Therefore, the disproportionate breast cancer-specific mortality in NHB women is unlikely explained by low rates of early detection. Future work should integrate SES and other social factors with screening rates and estrogen-receptor status to understand the complexities underlying breast cancer disparities.

9

Assessing the Role of Parental Human Papillomavirus Vaccine Uptake on the Association Between Child Sex-specific Disparities and Vaccine Uptake

Pollard, E, Tsai, MH, Holt, HK, Vu, M, Moore, JX

Purpose: The purpose of the current study was to examine the modifying impact of parents' vaccination initiation on sex disparities in parent-reported vaccine initiation among children.

Methods: Using 2022 National Health Interview Survey data, we conducted a cross-sectional analysis using weighted multivariable logistic regression models to analyze this relationship. Our outcome of interest was parent-reported vaccine initiation among children (reported initiation or did not report initiation). The sex of the child (male or female) and parent's vaccination status (initiated or unvaccinated) were our exposures of interest. Models were adjusted for parent/household (sex, age, education, income to poverty ratio, and family structure) and child characteristics (age, race/ethnicity, last doctor visit, insurance status). Pairs with at least one missing variable were excluded from analysis.

Results: Among 2,052 parents and children aged 9 to 17, unvaccinated parents reported a lower proportion of children initiated the vaccine series (28.8% vs. 49.9% for initiated parents, p <0.001). Among children with unvaccinated parents, male children had lower parent-reported vaccine initiation than female children (24.9% vs. 33.0% for female children with unvaccinated parents, p = 0.001). In adjusted analyses, female children were 1.45 times more likely to have parent-reported vaccine series initiation than males among children with unvaccinated parents (OR: 1.45, 95 CI: 1.12-1.87). This disparity did not persist among children with parents who initiated the vaccine series. Male and female children with unvaccinated parents had a decreased odds parent-reported vaccine series initiation the vaccine series compared to male children with parents who initiated the vaccine series (males: OR: 0.36, 95% CI: 0.22-0.59; females: 0.52, 95% CI: 0.32-0.86).

Conclusion: Sex specific disparities in parent-reported vaccine initiation only existed among children whose parents were unvaccinated. Effective implementation of educational interventions aimed at engaging both parents and their children in the decision-making process may improve vaccine uptake, particularly for male children whose parents are unvaccinated.

10-T

Association Between Race and Ethnicity, Neighborhood-Level Social Vulnerability, and Oral Cavity Cancer Diagnosis Stage

Tortolero GA, Murphy CC, Sturgis EM, Peskin MF, Yamal JM

Purpose: To examine the association between race and ethnicity (RE), neighborhood social vulnerability, and oral cavity cancer (OCC) diagnosis stage (late vs early) in a large, diverse population.

Methods: Using Texas Cancer Registry population-based data, we identified 13,021 adults diagnosed with OCC between 1995 and 2020. We examined the association of early (local) or late (regional and distant) diagnosis stage with RE [non-Hispanic White (White), non-Hispanic Black (Black), non-Hispanic Asian or Pacific Islander (Asian), and Hispanic] and US Centers for Disease Control and Prevention's neighborhood social vulnerability index. Logistic regression was used to estimate odds ratios (OR) for associations with RE and social vulnerability. We also assessed effect measure modification using single reference category logistic regression models and relative excess risk due to interaction (RERI).

Results: The OCC sample consisted of 77% White, 6% Black, 14% Hispanic, 3% Asian, and 47.4% late-stage diagnosis. Black (OR 3.30; 95% CI 2.81-3.88) and Hispanic (OR 2.02; 95% CI 1.83-2.24) patients had significantly higher odds of a late-stage diagnosis compared to White patients. Patients in the most vulnerable neighborhoods had higher odds of late-stage diagnosis (quintiles 5 vs. 1: OR 2.09; 95% CI 1.88-2.34) than those in the least vulnerable neighborhoods. We also found that social vulnerability modified associations of RE on an additive but not on a multiplicative scale (p-value = 0.28). For example, Black patients in the most (OR 4.72; 95% CI 3.70-6.02) but not least (OR 1.55; 95% CI 0.81, 2.94) vulnerable neighborhoods have higher odds of late-stage diagnosis compared to White patients in the least vulnerable neighborhoods (RERI 2.57; 95% CI 1.10-4.05). There was no evidence of effect measure modification for other RE groups.

Conclusions: In a large, diverse population, there were disparities in OCC diagnosis stage by RE and social vulnerability. RE differences in OCC stage were not apparent in the least vulnerable neighborhoods, indicating that addressing neighborhood disparities may mitigate individual-level disparities. Future research on the impact of neighborhoods on cancer outcomes is needed.

11-T

Attitudes and Practice Behaviors of Resident Physicians Surrounding Cancer Screening

Bentley P, Bieganski M, Eells K, Ryan Z, Zapata I, Roberts J

The early detection of cancer is widely acknowledged as crucial for saving lives. Screening programs have significantly reduced mortality rates associated with cervical, breast, and colorectal cancers over the past few decades. However, inconsistencies in screening guidelines among healthcare providers raise concerns about the uniformity of recommendations. This study investigates the practice behaviors, attitudes, and knowledge of cancer screening guidelines among medical residents in family medicine, internal medicine, and general surgery. A multi-institution survey was conducted, with 72 resident physicians participating. The study explores the sources from which residents acquire screening guidelines and evaluates their accuracy in recommending screening ages for colorectal, breast, and cervical cancers. Results indicate a preference for guidelines from the United States Preventive Services Task Force (USPSTF), although there are variations in recommendations among specialties. While residents demonstrate good knowledge of cervical cancer screening, they exhibit inconsistencies in breast cancer screening ages. Conflicting guidelines are perceived to impact patients' quality of care and confidence in the healthcare system. Residents primarily learn screening recommendations during medical school, highlighting the importance of early education. The study underscores the need for streamlined and consistent guidelines to mitigate confusion among providers and patients. Further research is recommended to explore the objective impacts of guideline variability on screening practices and patient outcomes, especially in the context of advancing technologies like artificial intelligence.

12-T

Barrier Characterization and Resolution Likelihood within the Context of Community-Focused Patient Navigation

Ver Hoeve, ES, Wightman P, Calhoun E, Hernandez M, Armin J, Hamann H

Purpose: Patient navigation reduces barriers to cancer care and enhances health outcomes. Describing the factors associated with barrier resolution within the context of patient navigation can inform future program optimization.

Methods: Primarily underserved patients with cancer (n=207) participated in a 3-month community-focused patient navigation intervention. Reported barriers were characterized and barrier resolution was explored at the patient- and barrier-level. Logistic regressions, conducted at the barrier level, estimated the likelihood of resolution associated with different factors, including three overarching barrier domains: Health Access, Psychosocial, and Financial. At the patient level, negative binomial regressions were used to estimate the factors associated with patients' barrier resolution rates (i.e. number of barriers resolved/number of total barriers).

Results: Resolution frequency differed across barrier domains (X2(2) = 7.826, p =.02); Health Access barriers were significantly more likely to be resolved than were barriers in the Financial domain (OR=0.61; 95%CI=0.41,0.89). This initial estimate of difference in resolution likelihood between domains remained robust, even after controlling for key demographic, socioeconomic, and cancer-related covariates. At the patient level, 56% of patients had at least one barrier resolved. For patients who only reported Financial barriers, the odds of any barrier resolution was approximately 80% lower, compared to those patients who reported barriers in each of the three domains (i.e., Health Access, Psychosocial, and Financial). For patients with only Health Access barriers, their barrier resolution rate was 11 times higher compared to patients who reported barriers in each of the three domains.

Conclusion: This community-focused patient navigation program was particularly effective at resolving Health Access barriers while Financial proved to be the most obstinate. This finding represents an opportunity to tailor future community-focused patient navigation interventions toward their strengths (e.g., addressing health access barriers) as opposed to assuming that navigation programs are equally effective at resolving all types of barriers.

14

Burden of Comorbid Conditions among Individuals Screened for Lung Cancer: What Can We Learn from Experience in Three Integrated Health Systems?

Braithwaite D, Karanth S, Slatore CG, Yang JJ, Tammemagi M, Gould MK, Silvestri GA

Purpose: Screening for lung cancer with low-dose computed tomography (LDCT) has been shown to reduce lung cancer mortality in trials involving younger, healthier, predominantly White populations. The comorbidity profiles of patients undergoing lung cancer screening in real-world settings are poorly understood.

Objective: To compare the comorbidity profiles of patients in the Personalized Lung Cancer Screening (PLuS) cohort with those of participants in the National Lung Screening Trial (NLST).

Methods: This multicenter cohort study was conducted across healthcare systems in California, Florida, and South Carolina. Patients who underwent LDCT lung cancer screening between 2016 and 2021 were identified through Current Procedural Terminology and Healthcare Common Procedure Coding System codes. Detailed comorbidity data, pulmonary function measures, and registry data were abstracted from electronic health records, institutional data, and state cancer registries, including Surveillance, Epidemiology, and End Results (SEER) data. These were compared with self-reported comorbidities of participants in the LDCT arm of the NLST.

Results: The PLuS cohort (n=31,799) included 49.0% participants age 65+ versus 26.6% in the NLST (n=26,723); 23.3% were Non-White in the PLuS cohort versus 8.5% in the NLST. The prevalence of comorbidity was substantially higher in our cohort than the NLST, particularly chronic obstructive pulmonary disease (32.7% versus 17.5%), diabetes (24.6% versus 9.7%), and heart disease (15.9% versus 12.9%). Among those in the PLuS cohort, 19.3% had a Charlson comorbidity score ≥4, 18.0% had a frailty index >0.20, 16.9% had a forced expiratory volume in 1 second (FEV-1) <50% of predicted, and 4.4% had an ejection fraction <40%. The prevalence of multimorbidity and frailty was especially high among those in the 75+ year-old age group.

Conclusions: The PLuS cohort includes older, sicker, and more racially/ethnically diverse patients than NLST participants. Older patients and those with consequential comorbidity likely have different risk-benefit profiles. The high prevalence of multimorbidity, frailty, and impaired cardiopulmonary function in PLuS suggests that the benefits observed in the NLST may not fully translate to real-world populations.

15

Cardiovascular Disease Mortality among Breast Cancer Survivors in Puerto Rico: 2004-2019

Sánchez-Díaz CT, Rodríguez-Ortiz G, Castro-Jiménez L, Segarra Vázquez B, Cordova-Pérez F, Colón-López V, Pérez-Cardona C

Purpose: Cancer and Cardiovascular disease (CVD) are the two leading causes of death in both the United States and Puerto Rico (PR). Breast cancer (BC) survivors, considered since the time at diagnosis, face an elevated risk of CVD mortality, largely due to the cardiotoxic effects of cancer treatments and the presence of shared cardiometabolic risk factors with BC. However, there is a need for studies examining the risk of CVD mortality specifically among BC survivors in PR, one of the most rapidly aging populations in the world. This study aims to assess and compare the risk of CVD mortality among BC survivors and the general population in PR from 2004 to 2019.

Methods: Data on BC survivors were obtained from the PR Central Cancer Registry for the period 2004 to 2019. Follow-up started approximately 12 months after diagnosis to account for treatment completion and extended through 2021. Standardized Mortality Ratios (SMRs) were calculated to compare CVD mortality risk between BC survivors and of the general population of women in PR aged 18 and older. The expected number of deaths was determined using age-, sex- and calendar year-specific mortality rates from the general population, obtained from the National Vital Statistics System.

Results: The overall SMR for CVD mortality among BC survivors was 2.18 (95% CI: 1.99-2.38), with 470 observed, compared to 215.89 expected CVD deaths during the study period. The total person-years at risk amounted to 66,388. A significant positive trend in increased risk of CVD mortality was observed by calendar year ($p < 0.001$), starting with a SMR of 1.51 (95% CI: 1.13-2.03) in 2004 and peaking in 2019 (SMR: 8.39; 95% CI: 4.64-15.15). Women under 60 years of age faced a particularly elevated risk (SMR: 8.48; 95% CI: 5.82-12.37), with SMRs declining to 1.73 (95% CI: 1.53-1.95) in women over 80 years of age.

Conclusion: Our findings reveal a significantly elevated CVD mortality risk among BC survivors in PR, particularly in younger survivors, compared to the general population. Increasing SMRs over time highlight the importance of understanding cardiometabolic risk factors and stress-related social drivers throughout survivorship to guide targeted interventions for improving cardiovascular health.

17-T

Challenges in Online Recruitment of Adolescent and Young Adult (AYA) Cancer Survivors: Strategies and Lessons Learned from a Mixed Methods Study

Tatum KL, Bean MK, Ford JS, LaRose, JG

Purpose: Online recruitment methods (e.g., social media) are frequently used to engage young adults in research, yet bots and "imposter participants" can compromise data quality. We describe strategies for detecting fraudulent participants in an ongoing mixed methods study focused on understanding how social drivers of health influence health-related quality of life, and identifying potential protective factors, among adolescent and young adult cancer survivors (AYAs).

Methods: In February 2024, we launched an online survey via REDcap (target N=200) that included an option to complete a qualitative interview (n=20). Participants completed a pre-screener, followed by the survey, received $25 for completing the survey and an additional $25 for the interview. Recruitment flyers and email text included a link to a secure online pre-screener; ads were distributed nationally via social media, community events, and AYA-focused organizations. To mitigate bots and imposter participants, respondents were required to pass a reCAPTCHA. Based on concerns of fraudulent activity, we adjusted our approach to ensure data integrity and maintain the credibility of our findings. We removed eligibility criteria and compensation details from our recruitment materials, reviewed pre-screeners prior to emailing participants the survey link, conducted follow-up phone calls to confirm survey completion and to verify contact information, and included duplicate open-ended questions throughout the survey to cross-check responses key variables (e.g., age, zip code) against the pre-screener.

Results: Within two months of launching the survey, 487 were completed. Early quality checks revealed duplicate surveys completed in a short period, inconsistent verifiable data (e.g., age at diagnosis, phone number), and suspicious email patterns, flagging 100% as likely fraudulent. After implementing revised strategies, 142 individuals completed the online survey over 5 months, with only 33% identified as likely fraudulent.

Conclusions: The threats of bots and imposter participants undermine data integrity and credibility of research findings, highlighting the need for adaptable, targeted recruitment methods for AYAs, and rigorous validity checks in online recruitment.

18

Community-Engaged Social Care Research to Advance Cancer Health Equity

Banegas M, Shultz A, Gomez M, Stack-babich MC, Rodriguez K, Nodora J

Community-engaged social care research (CESCR) relies on a locally developed structure that includes trust-oriented relationships; a clear understanding of each side's needs, assets, and priorities; and an equitable approach throughout the research process, from grant development to implementation and dissemination. As the work evolves, community and research partners collaborate to meet mutual needs. This structure is often missing in cancer research projects. To address this gap, we developed a partnership focused on advancing social care research for individuals and families in San Diego County and surrounding areas. We conducted a series of co-led, co-designed, and co-facilitated activities leveraging the infrastructure, expertise, and missions of three organizations to enhance social care research supporting health equity: the San Diego County Promotores Coalition (SDCPC), University of California San Diego (UCSD) Moores Cancer Center Community Outreach and Engagement (COE), and UCSD Center for Health Equity Education and Research (CHEER). Our activities included establishing a Community Health Worker Advisory Board (CHWAB) to guide our efforts, bidirectional trainings/workshops, and development of a Social Care Research Playbook for sustainable, community-academic research. CHWs were selected based on: (1)lived experiences with health-related social needs; (2) professional experiences helping community members with health-related social needs and lessons learned.

Results: The CHWAB is composed of n=6 individuals, including n=5 females, n=3 Latinos, n=2 Middle Eastern/North African, n=1 Asian American and Pacific Islander, representing the four sub-regions of San Diego County. Approximately, n=7 trainings were held covering topics such as: research 101; principles of community-engaged research; social care; cancer prevention; knowledge dissemination and impact; developing a community-engaged project. Co-creation of the Playbook is ongoing, with a goal of completing it by November 2025.

Conclusion: While challenging, CESCR is an approach that yields valuable, in-depth insights and strategies co-created with community members with lived experience, to advance sustainable social care research aiming to improve health equity of individuals impacted by cancer.

20-T

Correlates of Electronic Nicotine Delivery System Use for Weight Control among Sexual or Gender Minority Adults Who Smoke Cigarettes

Maldonado GT, Patev AJ, Wall CS, Carrico MA, Barnes AJ, Cobb CO

Purpose: To examine correlates of ENDS use for weight control among a group of SGM individuals who smoke cigarettes.

Methods: Five hundred fifty-four SGM adults who reported past 30-day cigarette use were recruited via Qualtrics Panels between June and July 2023. Among those who reported past 30-day ENDS use (n=174), a subgroup of individuals who reported ENDS use for weight control (n=37) were explored in greater detail. Participants completed an online survey that included self-reported sociodemographics, tobacco/nicotine product use behaviors, experiences of gender and sexual orientation discrimination, and dieting behaviors. Bivariate correlations explored self-report associations and ENDS use for weight control. Factors with significant associations were entered into a logistic regression model to understand the adjusted associations of potential risk factors of ENDS use for weight control among this group. Analyses were performed in IBM SPSS v.29.

Results: Most participants were bisexual (48%), women (51%), and White (68%) with a mean age of 35 years (SD = 9.5). Higher mean scores were observed in ENDS dependency and gender and sexual orientation discrimination measures among those that reported past 30-day ENDS use for weight control. When evaluating dieting behaviors, past 30-day diet pill use had the most pronounced significant association with ENDS use for weight control. Within the logistic regression model, discrimination based on gender identity and past 30-day diet pill use were both found to be statistically significant in predicting the risk of an individual utilizing ENDS for weight control purposes (p's<0.05).

Conclusion: Findings from this unique sample of SGM individuals who smoke cigarettes highlight that gender-based discrimination and certain dieting behaviors are associated with an increased risk of ENDS use for weight control. Prevention/intervention efforts should acknowledge the associated risk of such factors among SGM populations and tailor programs appropriately. Incorporating these findings could assist with closing the gap on tobacco-related health disparities, and disease burden among SGM individuals.

21

Cross-Sectional Analysis of Physical Health in Hispanic Prostate Cancer Survivors and their Caregivers Participating in a Pilot Dyadic Exercise Program

Contreras II J, Barrera M, SantaMaria B, Badger TA, Winters-Stone K, Skiba MB

Background: Hispanic communities experience high burden from prostate cancer; physical activity (PA) can improve health and wellbeing. Limited culturally relevant PA interventions exist for Hispanic men with prostate cancer and their caregivers.

Purpose: Describe enrolled sample of prostate cancer survivors and caregivers participating in Ejercicio Juntos, an adapted, 12-week culturally relevant dyadic remotely delivered strength training intervention for Hispanic men with prostate cancer and their caregivers.

Methods: We used community outreach, social media advertisement, and clinical referrals to recruit and enroll 16 dyads into Ejercicio Juntos. At baseline, participants completed questionnaires on demographics, body mass index (BMI), and physical activity. Physical function was assessed using a remote short physical performance battery (SPPB). Of the 16 dyads enrolled, 14 dyads allocated to intervention and are included in this descriptive analysis.

Results: Participants (n=28) averaged at an age of 62.4 ¬ffl 12.4 years; prostate cancer survivors were on average 5.8 years older than caregivers (65.3 ¬ffl 11.8 vs 59.5 ¬ffl 12.7 years, respectively). Survivors were on average 5 years post-diagnosis with 28.6% reporting Stage 2 while 35.7% did not recall their initial diagnosis stage. Dyads were primarily composed of spouses/partners (n=13 dyads). While 100% of survivors were Hispanic (71.4% Mexican origin), 64.3% caregivers were Hispanic (66.7% Mexican origin). Half of the participants reported Spanish as primary language spoken. BMI was not significantly different between survivors (26.6 ¬¨¬ffl 3.5) and caregivers (28.8 ¬¨¬ffl 5.5). Half of participants reported not engaging regularly in aerobic exercise while 64% reported not engaging in any resistance exercise; 40% reported engaging in no exercise activities together. Ten dyads completed remote SPPB at baseline. SPPB scores were not significantly different between survivors and caregivers (7.3 ¬ffl 1.4 vs 6.5 ¬ffl 2.1, respectively).

Conclusion: We successfully recruited a sample of Hispanic prostate cancer survivors and their caregivers to Ejercicio Juntos. Both survivors and caregivers reported low levels of physical activity and demonstrated moderate physical function. Pilot testing is currently ongoing.

22

Development of an Online Portal for Virtual Patient Navigation: Lessons in Working with Asian American Cancer Patients

Chu JN, Oh D, Allen L, Tsoh JY, Wang K, Kuo MC, Wong C, Bui H, Chen J, Hwang A, Ma C, Truong A, Li FM, Nguyen TT, Gomez SL, Shariff-Marco S

Purpose: We aimed to develop, implement, and test an online portal providing virtual navigation including access to resources, in English, Chinese, and Vietnamese for Asian American patients with newly diagnosed colorectal, liver, or lung cancer.

Methods: The Patient COUNTS portal was built on a secure, HIPAA-compliant, cloud-based platform. We recruited adults 21+ years old with a recent diagnosis of stage I-IV colorectal, lung, or liver cancer; who identified as Asian American; spoke English, Cantonese, Mandarin, or Vietnamese; and resided in the San Francisco Bay Area. Participants were assigned a language-concordant navigator who assessed needs and provided tailored resources and support for 6 months. Participants completed baseline, 3-month, 6-month, and user experience surveys. We report descriptive statistics on sociodemographic characteristics, quality of life, and user experiences. We used generalized estimating equations (GEE) to analyze repeated measures of quality of life (total FACT-G and physical-, social-, emotional-, functional well-being subscales separately).

Results: Among 51 participants, mean age was 58 years (SD=13), with 73% men, 65% speaking English, and 39% having less than a college education. Half had colorectal, 41% lung, and 8% liver cancers. 92% and 96% completed the 3- and 6-month surveys, respectively. The average total FACT-G score was 73.0 (SD=17) at baseline, 73.2 (SD=17) at 3 months, and 75.1 (SD=19) at 6 months. In GEE models, participants reported an increase in emotional well-being at 6 months compared to baseline (p=0.047). Among 47 participants who completed the user experience survey, some (45%) had technical issues with the portal, but most reported that the program was culturally appropriate (94%), that calls from the navigators were helpful (74%), and they would recommend the program to others (74%).

Conclusions: Patient COUNTS, providing virtual navigation in multiple languages for Asian American cancer patients, was highly acceptable. Lessons learned were used to improve portal features and usability for a follow-up study of breast cancer patients from multiple racial and ethnic groups. Language-concordant virtual navigation and online supportive care tools can extend the reach and benefits of patient navigation.

24

Differential Healthcare Due to Race in Relation to Late Stage at Breast Cancer Diagnosis among U.S. Black Women

Palmer JR, Xu NN, Holder EX, Barnard ME

Purpose: Investigate whether a self-perception of being treated differently due to race is associated with stage at initial breast cancer diagnosis among U.S. Black women, who on average are diagnosed at a later stage and experience a 38% higher breast cancer mortality.

Methods: In the Black Women's Health Study, a large prospective cohort study of self-identified Black women from all regions of the U.S., 42,130 participants answered the following question on the 2003 questionnaire, "Do you think you receive health care that is different from what others receive because of your race?" During the subsequent period (2004-2022), 1,617 of these women were diagnosed with invasive breast cancer. We used logistic regression to estimate the relative odds of being diagnosed at later stages rather than stage 1 for women who responded yes to the question versus those who responded no.

Results: Among 335 breast cancer cases who responded yes and 1,282 who responded no, 52.2% and 54.2% were diagnosed at stage 1, respectively. Two times as many in the yes group were diagnosed at stage 4 (6.5% vs 3.4%). The odds ratio for diagnosis at stage 4 versus stage 1 for self-reported racism in health care delivery was 2.03 (95% confidence interval (CI) 1.18-3.49) in an age-adjusted model and 2.09 (1.20-3.65) with additional adjustment for history of mammographic screening, years of education, neighborhood concentrated disadvantage, marital status, and body mass index. Women who answered yes to the question on racism in health care delivery did not have a higher odds of being diagnosed at stages 2 or 3 relative to stage 1.

Conclusions: These findings indicate that how Black women experience their interactions with healthcare providers, independent of their individual socioeconomic status and use of mammographic screening, can lead to major delays in breast cancer diagnosis, reducing the chances of survival. More work is needed to identify the key interactions between patients and providers that lead to delayed detection and treatment. Nascent programs to educate personnel who work in primary care and radiology about cultural sensitivity and bias, including unconscious bias, must be continued and expanded.

25-T

Disparities in HPV Vaccination by Race, Ethnicity, and Nativity Among Immigrant Populations in New York City

Chebli P, Nakra NM, Trinh-Shevrin C, Kwon SC, Wyatt L, Foster V, LeCroy MN

Purpose: To explore disparities in HPV vaccination in a predominantly immigrant population with non-English language preference in New York City.

Methods: Data was collected from the Cancer Community Health Resources and Needs Assessment (October 2021-December 2022) by the NYU Langone Health Perlmutter Cancer Center and 23 community partners. Our analysis included 1,278 respondents aged 18-45 years without missing data on exposures, outcomes, and covariates. Multinomial logistic regression models estimated the odds of individuals receiving 0 doses (reference), 1 dose, more than 1 dose, or having an unknown HPV vaccination status across six race and ethnicity groups: White; Hispanic; Black; SWANA (Southwest Asian/Middle Eastern/North African); Asian; and Other, inclusive of American Indian/Alaskan Native, Central Asian, Mixed, Native Hawaiian and Pacific Islander, and Unknown. An interaction term between race/ethnicity and nativity was included in the final model after confirming significance (p<0.01). Models were adjusted for covariates (e.g., socio-demographics).

Results: The sample was predominantly women (61%), foreign-born (65%), and insured (73%). About 53% never received the HPV vaccine and 23% reported unknown vaccination status. Both foreign-born SWANA and White individuals compared to US-born White individuals had lower odds of receiving one dose vs. no doses of the HPV vaccine (OR=0.21, 95% CI: 0.06, 0.74 and OR=0.35, 95% CI: 0.12, 0.96, respectively). The odds of receiving more than one dose vs. no doses were lower among foreign-born Asian (OR=0.34, 95% CI: 0.17, 0.71), Black (OR=0.39, 95% CI: 0.16, 0.95), SWANA (OR=0.07, 95% CI: 0.02, 0.34), and White (OR=0.08, 95% CI: 0.02,0.30) individuals, compared to US-born White individuals. Foreign-born Asian individuals compared to US-born White individuals had 2.82 times (95% CI: 1.16, 6.83) higher odds of unknown vs. no doses.

Conclusions: Analyses showed racial and ethnic and nativity disparities in HPV vaccination initiation and completion. Foreign-born individuals had lower odds of receiving multiple doses, signaling potential gaps in vaccine knowledge or access. Tailored interventions in under-immunized, foreign-born populations are needed to prevent HPV-associated cancer inequities.

26

Dynamic Neighborhood Conditions and Time to Breast Cancer Treatment

Plascak JJ, Ghias E, Elsaid MI, Chen JC, Obeng-Gyasi S

Purpose: Many studies of neighborhoods and cancer outcomes do not account for residential mobility or temporal changes in socioenvironmental factors. This study's purpose was two-fold: 1) measure socioenvironmental changes in situ and from residential mobility, and 2) test associations between socioenvironmental exposure and time to breast cancer treatment.

Methods: Inclusion criteria were: invasive, female BrCa diagnosis and patient of The Ohio State University between 2013 and 2020; and address history ≥1 yr pre-diagnosis. Age, marital status, race-ethnicity, health insurance, residential address history, stage at diagnosis, diagnosis date, first treatment date and type were integrated with annual census tract-level socioeconomic composition (Yost index) and African American segregation (% AA), and monthly address-level neighborhood disinvestment from spatio-temporal models of neighborhood audit items. Z-scored neighborhood Yost (proportional to greater socioeconomic status), % AA, and disinvestment were analyzed separately by sociodemographic-, residential mobility- (moves, address dates), and diagnosis period (pre / post) covariates using multilevel linear models. Time to first breast cancer treatment was modelled using accelerated failure time models, yielding time-to-treatment changes by time-weighted average neighborhood factors.

Results: Among 1120 eligible BrCa patients, address history averaged 57 months (range: 13-108) and 14% moved at least once. Adjusted for covariates, neighborhood exposures were higher pre- compared to post-diagnosis for disinvestment (0.05 (95% CI: 0.04, 0.06)) and Yost (0.02 (95% CI: 0.02, 0.03)). Compared to staying in place, a move was associated with lower disinvestment (-0.04, 95% CI: -0.02, -0.05), higher Yost (0.05, 95% CI: 0.04, 0.06) and lower % AA (-0.01, 95% CI: -0.00, -0.02). Adjusted for covariates and pre-diagnosis exposures, time-to-treatment increased 12% (95% CI: 1.9%, 22.5%) for each standard deviation increase in post-diagnosis disinvestment.

Conclusion: Socioenvironmental exposures change pre- and post-diagnosis among BrCa patients and were associated with longer time to treatment receipt, highlighting the importance of measuring temporal dimensions of neighborhood exposures.

27

Evaluating the Association Between Upstream Individual- and Neighborhood-Level Determinants of Health and Breast Cancer Screening

Morley F, An A, Bea V, Tamimi RM, Kensler KH

Purpose: We examined multiple individual- and neighborhood-level determinants of health to contextualize internal, external, and environmental forces that act on breast cancer screening rates and how these associations may differ by race and ethnicity.

Methods: We identified 25,356 females aged 40-74 with electronic health record (EHR) and survey data and no reported history of BC in the All of Us Research Program. Questions that made up Perceived stress (PSS), everyday discrimination (EDS), neighborhood disorder (NDS), and neighborhood social cohesion (NSCS) were the validated instruments we considered as the self-reported upstream determinants of health. PSS was scored using prescribed cutpoints and the other measures were categorized into quartiles. Receipt of BC screening in the two years prior to enrollment was ascertained in the EHR. The associations between determinants of health and BC screening were evaluated in multideterminant models fit sequentially to examine the hypothesized causal pathway linking the determinants and BC screening.

Results: 48% of women underwent BC screening in the two years prior to enrollment. Non-Hispanic Black and Hispanic women were more likely to report high NDS, and low NSCS. Non-Hispanic Black women were more likely to report high EDS. In the multideterminant sequentially adjusted model, women who reported high EDS had 9% lower odds of screening (OR= 0.91,95%CI:0.84-0.98), low NSCS had 10% lower odds of receiving screening (OR=0.90, 95%CI 0.81-0.99,Q4 vs Q1), and high PSS had 25% lower odds of BC screening compared to those who reported low PSS, respectively (OR=0.75,95%CI 0.64-0.88). NDS was not associated with screening. Hispanic women had lower screening rates than non-Hispanic White women (OR=0.86, 95%CI 0.77-0.95), but the associations between the determinants and BC screening did not differ by race and ethnicity.

Conclusion: Higher stress, discrimination, and lower neighborhood social cohesion were associated with lower BC screening rates. Women who report high levels of social cohesion may benefit from social support that bolsters screening rates, while women who report high levels of stress or discrimination may face additional barriers to screening or may not prioritize BC screening.

28-T

Evaluation of a Social Network Colorectal Cancer (CRC) Fecal Immunochemical Test (FIT) Intervention to Address CRC Disparities in Black Communities in New York City (NYC)

Christian-Afflu S, Gimba E, Balogun F, Evoh T, Gilliland J, Narang B, Leng J, Gany F

Purpose: To assess facilitators and barriers to implementation of a colorectal cancer (CRC) screening program for Black participants, a community with the highest CRC mortality rate in Manhattan, NY, and their social networks (SN).

Methods: As part of an ongoing process evaluation, research staff recruited participants (n=7) from a pilot randomized controlled trial that recruits Black male community members in NYC who have completed fecal immunochemical tests (FIT) and offers them CRC education and resources to encourage three people in their SNs to complete FIT testing. They participated in semi-structured interviews about experiences in the program, increasing self-efficacy related to FIT testing, facilitators and barriers to participation, and incorporating behavioral change strategies such as motivational interviewing (MI) and goal setting to improve FIT uptake. Interviews were recorded and staff used deductive approaches to create summaries for interview transcripts that were then consolidated into a matrix used to identify themes.

Results: Participants reported gaining relief from knowing their FIT results, and knowledge about FIT testing to share with their SNs. Suggested methods to increase self-efficacy related to FIT testing included using testimonies from those who completed FIT testing and those diagnosed with CRC, and disseminating education about FIT testing via social media. Suggested facilitators included monetary incentives, offering testing in multiple languages and convenient locations, and partnering with trusted community- and faith-based representatives and organizations to disseminate FIT testing information and decrease medical mistrust. Barriers to FIT testing among community members included lack of time, disinterest in discussing health topics, concerns regarding insurance status, potential treatment-related economic difficulties if diagnosed with CRC, inability to take time off work, and medical mistrust. Most participants believed MI could be utilized to increase FIT testing uptake. All believed goal setting could encourage people to test.

Conclusion: Preliminary results suggest strategies that may enhance FIT testing uptake include collaborating with community partners and incorporating behavioral change strategies such as MI.

29-T

Examining Racial Disparities in Cancer Incidence and Mortality across South Carolina Regions

Stokes WM, Adams SA

Purpose: This study uses mortality-to-incidence ratios (MIR) to compare population-based cancer outcomes within the state of South Carolina (SC) to national trends and to examine the extent of white-black cancer disparities.

Methods: We collected incidence and mortality data from the South Carolina Central Cancer Registry (SCCCR) and the National Cancer Institute's Surveillance Epidemiology and End Results Program (SEER) for 12 major cancer sites (2016-2021, excluding 2020). SEER consists of 24 individual registries to create a nationally representative sample. Data from SCCCR was collected at the state level and for each of SC's 4 geographic regions: Upstate, Midlands, Low Country, and Pee Dee. Three race groups were included: non-Hispanic white, non-Hispanic black, and all races. The overall mortality rate was then divided by the incidence rate to calculate an MIR for each site.

Results: Major MIR disparities were found when comparing SCCCR to SEER. Of note were SC's MIR increases over SEER for non-Hispanic blacks in the following sites: all male cancers (+22.5%), oral (+25.9%), prostate (+31.3%), and cervical (+49.2%). In the Pee Dee region, the black population had MIRs above even this elevated state average for oral (+22.1%) and cervical (+22.2%) cancers. Large disparities also exist when examining the percent difference between blacks and whites. For SEER, the black population had large MIR increases for oral cancers (+32.7%) and female breast cancers (+31.5%). In SC, we found elevated rates for oral (+38.7%), colon (+20.1%), female breast (+28.1%), and cervical (+39.2%) cancers. The Low Country had the largest disparities with black MIR elevations above 20% for 9/12 cancer sites studied.

Conclusions: To our knowledge, this is the first comprehensive assessment of MIR comparing national and state estimates. These results highlighted the poor cancer outcomes in SC compared to the SEER average and the larger magnitude of cancer disparities at both the state and regional levels. This research has important implications for SC by pinpointing where public health interventions are most needed. By prioritizing areas and cancer sites with the biggest concern, we can ensure better cancer prevention efforts and equity for SC's minority populations.

30-T

Exploring Community Concerns: Shared Beliefs and Barriers to Breast and Colorectal Cancer Screening in Chinese Immigrant Women, A Qualitative Study

Liang L, Lin JJ, Itzkowitz SH, Jandorf L, Wisnivesky JP, Wang CP

Purpose: Among Chinese immigrant women (CIW), the fastest growing racial group in the United States, cancer remains the most common cause of death. Colorectal cancer (CRC) and breast cancer (BC) are leading causes of preventable mortality in CIW, yet screening rates are well below national benchmarks. In this qualitative study, we sought to explore community perspectives regarding factors that influence CRC and BC screening decisions in CIW.

Methods: We conducted 5 focus groups with community stakeholders from five community-based organizations (i.e., social workers, case managers, outreach coordinators, nurses) that serve Chinese immigrants in New York City. Discussions were focused on identifying barriers to, and facilitators of, CRC and BC screening, as well as strategies to enhance screening completion. Three coders developed the code key through inductive analysis, independently coded transcripts of the focus group audio recordings and met to resolve discrepancies.

Results: Of the 22 participants, 86% identified as female and 95% as non-Hispanic Asian with a median age of 34 years (range 25-60). All participants were bilingual (i.e., English and Mandarin, Cantonese, or multiple Chinese dialects) and 86% were foreign-born. Under-perception of cancer risk, differing healthcare approaches (East vs. West), cancer stigma, and social factors were believed to shape health beliefs. Barriers to CRC and BC screening include lack of knowledge/motivation, medical mistrust, consequences of detecting cancer, language and healthcare system factors (e.g., insurance concerns). Multi-modality education, positive social and family influences, and navigational support were identified as facilitators. Compared to BC screening, CRC screening was viewed as more challenging to complete due to a lack of emphasis and logistical complexity.

Conclusion: Community stakeholders provided new insights into multi-level elements that shape BC and CRC screening participation among CIW. Our results highlight the need for community-based strategies that simultaneously target the sociocultural and structural barriers to screening for multiple cancers. Individual interviews with CIW will be performed to explore perceptions of CRC and BC screening to triangulate with our stakeholder findings.

32-T

Factors Influencing the Uptake of Healthy Lifestyle Changes among Breast Cancer Survivors in the Black Women's Health Study

Barnard ME, Desai NA, Xu NN, Ko NY, Palmer JR

Purpose: To understand whether community-level and individual-level factors are associated with the uptake of healthy lifestyle changes after breast cancer.

Methods: We included women in the Black Women's Health Study (BWHS) who were diagnosed with Stage 1-3 invasive breast cancer. Stage was obtained from medical records and state cancer registries. Participants reported individual-level social drivers of health (SDOH) on biennial questionnaires, and we used geocoded home addresses to determine exposure to community-level SDOH. Pre- and post-diagnosis health behaviors were also queried on biennial questionnaires and used to ascertain uptake of healthy lifestyle changes, including reduced alcohol use, reduced BMI, and increased physical activity. We used logistic regression to compare the odds of healthy lifestyle changes among women with high versus low stage at diagnosis, and across levels of each SDOH. We report age-adjusted odds ratios (OR) and 95% confidence intervals (CI).

Results: Later stage at diagnosis was associated with reduced alcohol use (OR=2.04; 95% CI 1.30-3.19 for stage 3 vs. 1) and reduced BMI (OR=2.05; 95% CI 1.37-3.07 for stage 3 vs. 1). Neighborhood disadvantage was not associated with reduced alcohol use in the full cohort of breast cancer survivors; however, among those diagnosed at Stage 2 or 3, living in a disadvantaged neighborhood was associated with reduced alcohol consumption (OR=1.94; 95% CI 1.09-3.43 for quartile 4 vs. 1). Neighborhood disadvantage was also associated with reduced BMI (OR=1.58, 1.10-2.26 for quartile 4 vs. 1). Results for individual-level SDOH were less consistent. Compared to those in the highest income bracket (≥$100,000/year), those in the lowest income bracket (<$25,000/year) were more likely to experience a post-diagnosis decrease in BMI (OR=2.31; 95% CI 1.37-3.90); yet, completing more education (≥16 years vs. <13 years) was associated with an increase in physical activity (OR=1.82; 95% CI 1.18-2.82). There were no associations between individual-level SDOH and reduced alcohol use.

Conclusion: A stage 3 breast cancer diagnosis may motivate healthy lifestyle changes in some women. Additional analyses are underway to clarify how SDOH work together to influence lifestyle changes in breast cancer survivors.

33-T

Feasibility and Acceptability of Integrating Patient Navigation into Tobacco Cessation for Cancer Patients

Alison Brecher, PhD, MPH, Kelsey Lachow, MPH, Nicole Harrington, MPH, Allison Zambon, MHES, CHES, Donna Edmondson, MSN, CRNP, Carolyn Zawislak, PA-C, Linda Fleisher, PhD, MPH

Purpose: A pilot study was conducted to determine the acceptability and feasibility of adding a patient navigation intervention to the Tobacco Treatment Program as well as preliminary effectiveness.

Methods: The first 30 patients enrolled served as the Pre-Intervention group (Pre) and received standard of care. Patients in the intervention group (Int) met with the Patient Navigator (PN) two weeks after their first visit and two weeks after their second visit. The TTP providers, PN, and research team collaborated to ensure continuity of care. The navigation intervention supplemented the TTP services and assessed and addressed barriers in two primary areas: 1) direct barriers to tobacco cessation, e.g. ability to purchase NRT and 2) psychosocial barriers, e.g., addressing other familial and community barriers, additional services and support. Feasibility and acceptability were assessed through patient surveys at baseline, one and six-months after the first visit, regular meetings with the providers and research team, and a provider survey.

Results: There were 85 patients in the study (28 Pre and 57 Int). ~ 60% of patients were White and ~40% were Black. Over 90% were not Hispanic. Overall, 85% of Int patients indicated working with the PN was helpful. Patients highlighted that PN was very encouraging and that it was helpful to have someone to talk to between TTP visits about barriers to cessation. The providers found the intervention fit well into the workflow and supported the inclusion of a health educator or navigator in the program. Providers emphasized that a PN would enhance support, streamline processes, and provide necessary education, especially during challenging times for patients. Preliminary quit data found that, the Int had higher odds of quitting smoking compared to the Pre (OR = 1.39, p = 0.66), though it was not significant, at 1-month. At 6-months, the Int had significantly higher odds of quitting smoking (OR = 5.76, p<0.05) compared to the Pre.

Conclusion: Patient navigation integration is feasible and acceptable to both providers and patients. Additionally, patients in the Int group were more likely to have quit at 6 month follow up. The next steps are to design a randomized trial focused on the efficacy of the navigation intervention.

34-T

From Awareness to Action: Impact of an Educational Intervention on Cervical Cancer Preventive Practices in South India

Sankuru Daniel Finney, Sunkavalli Chinnababu, Lakshmi Harish Neelamraju, Dasari Sumedha Sahana Sree, Dulipala Phanindra, Kamunuri Ravi Kiran, Anthony Vipin Das

Purpose: To assess baseline awareness and preventive practices regarding cervical cancer and evaluate the impact of an educational intervention during the Guinness World Records' Largest Cervical Cancer Awareness Lesson in addressing knowledge gaps.

Methods: This large-scale cross-sectional study was conducted at Vignan University, Guntur, India, on March 18, 2023, involving 3,157 attendees through convenience sampling to ensure broad participant inclusion. A semi-structured, pre-tested questionnaire gathered socio-demographic data and information on cervical cancer awareness and preventive practices. Attendees completed pre-test and post-test surveys, with awareness levels classified into high, moderate, and low based on their responses. Data analysis was performed using IBM SPSS v.20, with results expressed in frequencies, percentages, and paired t-tests to assess changes in awareness levels and willingness for vaccination and screening.

Results: Before the educational intervention, 11.6% of attendees had a high level of awareness about cervical cancer, while 46.1% had moderate awareness; post-intervention, high awareness increased to 58.3%. Initial vaccination rates were low, with only 8.0% vaccinated, and 8.2% having undergone a Pap smear test. Post-lesson, willingness to get vaccinated rose from 38.9% to 78.2%, and willingness to undergo screening increased from 37.6% to 86.1%. The paired t-test revealed a significant improvement in awareness scores, with mean scores increasing from 4.28±2.66 (pre-test) to 9.21±2.43 (post-test) ($p < 0.0001$). Socioeconomic status, age, and education level significantly influenced initial awareness and preventive practices, with improvements observed across all groups post-lesson.

Conclusions: The educational intervention significantly improved cervical cancer awareness and the willingness of attendees to adopt preventive measures such as vaccination and screening. The study highlights the potential of large-scale, targeted educational programs to drive meaningful improvements in health awareness and preventive behaviors, offering a model for similar interventions in other low- and middle-income settings.

35-T

From Knowledge to Action: HPV Knowledge, Safety Concerns for HPV Vaccination and Gender Disparities for Cancer Prevention

Xu YA, Anderson K, Dawkins-Moutlin L, Pierce J, Cho D, Hopfer S, Li Y, Lu Q.

Purpose: Human Papillomavirus (HPV) is the most common STI on U.S. campuses, affecting all genders. Persistent HPV infections can cause six types of invasive cancer, but vaccine uptake remains suboptimal among young adults, particularly males. The study aims to understand the interplay between HPV knowledge, safety concerns and gender, and their association with HPV vaccination attitudes and, subsequently, HPV vaccination intent.

Methods: We used baseline data from an HPV vaccine intervention study that recruited racially diverse unvaccinated young adults aged 18-26 years from four universities (N=298). Hayes PROCESS macro model 9 was used to assess the effect of HPV knowledge on HPV vaccination intent, mediated by attitude, with gender and HPV vaccine safety concern as moderators (bias-corrected 95% confidence intervals and 5000 bootstrapped). Age, race, and sexual activity status were controlled for.

Results: The effect of HPV knowledge on vaccination intent was fully mediated by vaccination attitudes ($b = .72$, $SE = .09$, $t = 8.28$, $p < .001$). Moderation analyses revealed that gender and safety concerns influenced the strength of the knowledge-attitude link respectively, with stronger effects for females (borderline significance, $b = .08$, $SE = .05$, $t = 1.79$, $p = .075$) and those with lower safety concerns ($b = .22$, $SE = .04$, $t = 4.94$, $p < .001$). Among males with high safety concerns, the mediating effect of attitudes was diminished ($b = .03$, $SE = .04$, $t = .88$, $p = .38$).

Conclusion: Knowledge positively impacts vaccination intent indirectly through attitude, such that knowledge influences cognitive factor and attitude, to shape intent. The positive effect of knowledge on attitude was weakened when people were concerned about vaccine safety, particularly for males. Future work may benefit from addressing safety concerns, especially among men, through educational campaigns to debunk misinformation or disinformation against HPV vaccines, to enhance the impact of knowledge on increasing vaccine intent. Clarifying the factors that drive the gendered position and developing interventions to address the factors that result in heightened safety concerns among males may help to close the gender gap in HPV vaccine uptake for HPV-related cancer prevention.

36

Healthcare Providers and Practices Played Key Roles on HPV Vaccine Uptake in Vietnamese American Adolescents: Insights from the National Immunization Survey-Teen, 2015-2019

Zhu L, Liu, EZ, San Juan N, Siu PT, Pan C, Ma GX

Background: HPV vaccines are highly effective in preventing cervical, anal, and other pre-malignant and malignant diseases caused by vaccine-specific HPV types. However, HPV vaccination rates among Vietnamese American (VA) adolescents remain suboptimal, despite increased public health efforts over the past decade. Limited knowledge exists on how provider and practice-level characteristics influence vaccine uptake in this population, in part due to the absence of disaggregated data.

Methods: The analysis sample for this study includes 769 Filipino American (FA) adolescents (aged 13-17) from the National Immunization Survey-Teen (2015-2019) datasets. The objective was to identify risk factors influencing HPV vaccine uptake and completion in FA adolescents compared to the aggregated Asian American sample. Survey-weighted multivariate logistic regression was used to examine multilevel factors associated with vaccination.

Results: Less than two-thirds (64.21%) of Vietnamese American (VA) adolescents received at least one dose of the HPV vaccine, and only 43.68% completed the full regimen. Additionally, 70.18% reported receiving a provider's recommendation for the HPV vaccine, and 63.17% reported having a pediatrician. Logistic regression analysis revealed that provider recommendations and the types of healthcare facilities were significant predictors of both initiation and completion of the HPV vaccine regimen ($p < .05$). In addition, Census region of residence, types of insurance, and mother's educational level were significantly associated with HPV vaccine uptake among VA adolescents.

Conclusion: These findings suggest the need for evolving strategies to increase HPV vaccination among VA adolescents, focusing on improving provider engagement, cultural competency, and communication. The results underscore the importance of disaggregating Asian American data to address the unique needs of specific ethnic groups. These insights contribute to advancing equity in cancer prevention efforts.

37-T

Identifying Disparities in Head and Neck Cancer Clinical Trial and Study Enrollment

Pulavarthi TS, Iheagwara U, Abdul-Rahman N, Skinner HD, Mazul AL

Improving diversity in cancer studies is essential in expanding the generalizability of study findings and access to novel therapies. Few studies have explored participation of head and neck cancer (HNC) patients in studies. This study investigates sociodemographic and geographic factors associated with lower participation among HNC patients. We retrospectively analyzed HNC patients treated within the University of Pittsburgh Medical Center (UPMC) system from 2012 to 2022 (n = 2312), including those enrolled in any of the 43 HNC studies. The two primary outcomes were participation in an HNC study and involvement in a clinical trial. Based on patient addresses, we incorporated the area deprivation index (ADI), rural-urban commuting area code (RUCA), and distances traveled to the nearest radiation oncology center. Logistic regression models evaluated associations with both outcomes. Of 2312 patients, 1190 (51.5%) participated in a study, with 4.2% being Black and 25.4% male, and 395 (17.1%) in clinical trials, with 6.6% being Black and 18.0% male. Significant differences were observed based on geospatial demographics, age, and cancer diagnoses. Black patients or those of other racial/ethnic backgrounds were less likely to participate in HNC studies than their white counterparts (Odds Ratios (OR) 0.52, 0.42; 95% Confidence Intervals (95% CI):0.33-0.80, 0.19-0.88). Patients older than 75 or were 30-45 miles from the nearest treatment center were also less likely to participate than those younger than 45 or lived within 15 miles (OR 0.54, 0.48; 95% CI:0.31 - 0.94, 0.27-0.84). Patients in the lowest two ADI quartiles were less likely to participate in clinical trials compared to those in the highest quartile (OR 0.59, 0.53; 95% CI:0.39 - 0.89, 0.34-0.82), and those older than 75 were less likely to participate in trials than those younger than 45. Medicaid and Medicare patients were also less likely to participate (OR 0.64, 0.56; 95% CI:0.44 - 0.92, 0.39-0.80) compared to privately insured patients alongside patients in a large rural city versus urban (OR 0.54; 95% CI: 0.34-0.82). Barriers such as geographic access, insurance coverage, and trial availability may impact participation. Addressing proximity, social support, and travel burdens may improve enrollment.

38

Impact of a Facebook Intervention (#HPVvaxtalks) to Promote HPV Vaccination Among Young Black Adults: A Pilot Study

Adegboyega A, Wiggins A, Ickes M

Purpose: Persistence high-risk Human Papilloma virus (HPV) infections can cause cancer. Despite the pervasiveness of HPV, gaps in HPV-related cognition, and HPV-vaccine uptake related disparities exist for Black individuals. This study aimed to assess the impact of a Facebook-based intervention (#HPVVaxTalks) in improving cognitive outcomes, reducing vaccine hesitancy, and increasing vaccine intention, and uptake among young Black adults aged 18-26 years.

Methods: A pre-post intervention (#HPVVaxTalks) study was conducted among 43 young Black adults who engaged in an 8-week Facebook intervention. Participants completed data on HPV knowledge, HPV vaccine knowledge, vaccine hesitancy, and vaccine uptake. Data were analyzed using paired t-tests and repeated measures analysis.

Results: Thirty-two of the 43 (74%) participants completed the follow-up survey and of the 23 participants who reported not having ever received the vaccine at baseline, 7 (30%) reported receiving the vaccine at follow-up. Participants demonstrated significant improvements in HPV knowledge ($p = .001$) and HPV vaccine knowledge ($p < .001$) post-intervention. However, there were no significant changes in other outcomes. Feedback from open ended questions and qualitative interviews highlighted participants' satisfaction with the intervention and its role in increasing HPV awareness.

Conclusions: The findings from this study supports the use of Facebook platform for HPV vaccination awareness and health promotion among young Black adults. Given the potential reach, additional research is needed to test this intervention on other social media platforms.

39

Impact of Administrative Burden on Cancer Care Outcomes for the Uninsured: Studying Coverage Gaps at a Large Urban Safety-net Health System

Wang L, Narayan A, Sadeghi N, Halm EA, Hong AS

Background: Although safety net coverage programs like Medicaid exist to fund health care for low-income patients, the administrative burden of the lengthy application limits uptake by eligible individuals. Therefore, many patients do not attempt to enroll until they become ill, which is common among uninsured adults diagnosed with cancer. The delays in enrollment for patients with uncertain coverage at the time of diagnosis - those in limbo - and subsequent impacts on health outcomes are understudied. We estimated the patient and health system burdens for those with uncertain coverage status at the time of cancer diagnosis at Parkland Health in Dallas, Texas.

Methods: We assembled the electronic health record financial encounter data of patients with an incident cancer diagnosis in the Parkland tumor registry. We defined patients as being “in limbo” if they had self-pay, pending, or missing insurance plans at the date of diagnosis. We used coarsened exact matching to balance across age, race, Spanish-language preference, Charlson, and screenable cancer type, then multivariate regression to compare patients that were in limbo to those that had established coverage before cancer diagnosis.

Results: We identified 16,909 adults newly diagnosed with cancer, 78% of whom were < age 65, 53.7% female, 71.8% Hispanic and/or Black, and 29.8% were Spanish-language preferring. One-third (35%) were in limbo at diagnosis, which lasted for a median of 21 days (IQR 13 - 32). Over half (55%) of patients in limbo resolved to Medicaid or charity care. Patients who experienced limbo had a median of 629 financial account notes in the first year after diagnosis, 76 more than the comparison group (95% CI 32.7 - 119.3) and began treatment 3 days later (95% CI 0.5 - 5.4). They also had a median of 2 ED visits in the year after diagnosis, 0.2 more than patients never in limbo (95% CI 0.14 - 0.34), and 2.3 more inpatient hospital days (95% CI 1.6 - 3.0).

Conclusion: The administrative burden of enrolling into coverage programs for the uninsured may impose direct and indirect costs on patients and safety-net health systems and may contribute to worse cancer care outcomes.

40

Impact of Everyday Discrimination and HIV-Related Stigma on Mental Health Outcomes among Cancer Survivors with HIV Treated at an NCI-Designated Comprehensive Cancer Center (CCC) in Florida

Islam JY, Hume E, Sprow O, Lin YC, Velez AP, Coghill AE, Giuliano AR, Vadaparampil ST, Suneja G, D’Souza G, Camacho-Rivera M, Friedman RM, Jim H, Turner K

Purpose: Cancer survivors with HIV have worse mental health outcomes compared to those without HIV. No prior studies have examined potential causes of this disparity, such as the discrimination and stigma PWH experience. Our objective was to evaluate the impact of discrimination and stigma on mental health outcomes among cancer survivors with HIV.

Methods: Between January 2023-September 2024, we surveyed PWH with a recent cancer diagnosis (at least one month prior) who received care (defined as active treatment through surveillance) at an NCI-Designated CCC within the past 12 months . The survey included the following measures: Everyday Discrimination scale, HIV stigma scale, the Center for Epidemiologic Studies Depression scale, the 3-item UCLA Loneliness scale, and the 10-item Perceived Stress Scale. We used multivariable linear regression to estimate associations of discrimination and stigma scores separately, with each mental health outcome after adjustment for age, sex, annual household income, race and ethnicity, years since HIV diagnosis, and cancer type.

Results: Overall, we included 95 PWH (Median age:59 years), including adults who were 76% men based on sex assigned at birth, 47% heterosexual, 51% non-Hispanic White, 33% with high school or less educational attainment, and 32% with an annual household income of $20,000 or less. Thirty-seven percent were Medicaid-insured and 75% were diagnosed with HIV over ten years ago. The most common cancer types included lymphomas (30%), prostate (11%), lung (10%), anus (8%), and breast (6%) cancers. Substantial proportions of PWH had symptoms consistent with depression (53%; CES-D ≥16), loneliness (45%; ≥6 score), and perceived stress (75%; ≥14 score). HIV-related stigma was positively associated with significant depressive symptoms (β:0.17; 95% CI: 0.02-0.31); loneliness (β:0.03; 95% CI: 0.01-0.06); and high perceived stress (β:0.13; 95% CI: 0.03-0.22). Everyday discrimination was positively associated with significant depressive symptoms (β: 0.24; 95% CI: 0.06-0.43).

Conclusion: Mental health symptoms among cancer survivors with HIV are impacted by HIV-related stigma and everyday discrimination, which can adversely affect patient trust and follow-up care with significant adverse outcomes among PWH.

41

Impact of Nativity, US Residency, and Citizenship Status on the Association Between Allostatic Load and Cancer Mortality Risk in Hispanic/Latinx Americans: Findings from NHANES (1999-2019)

Amezcua J, Miranda V, Lopez-Pentecost M, Islam JY, Vernon M, O’Connor K, Moore JX

Allostatic load (AL), a measure of the cumulative physiological stress is known to increase the risk for chronic diseases, including cancer. In the United States (U.S.), Hispanic/Latinx (H/L) people face acculturation-related stressors such as family separation, low socioeconomic status, language barriers, racism, and discrimination. These adverse experiences can lead to an accumulation of stressful life events that may increase AL and subsequent cancer risk. This study aims to examine the moderating role of Nativity, U.S. citizenship status and length of time living in U.S. on the relationship between high AL and risk of cancer mortality among Hispanic/Latinx people. We performed a retrospective analysis using data from the National Health and Nutrition Examination Survey (NHANES) from 1999 to 2010 linked with National Death Index with follow-up through December 31, 2019. We fit weighted Cox proportional hazards models to estimate hazard ratios and associated 95% confidence intervals of cancer death, stratified by country of birth, U.S. citizenship status, and length of time in U.S. Among 7,299 H/L people, 2,835 (33.4% weighted) had high AL, and 4,464 (66.6% weighted) had low AL. We observed that among all H/L people, those with high AL have a 107% increased risk of dying from any cancer (HR = 2.07, 95% CI = 1.27 - 3.37) when compared to those with low AL. When stratifying by U.S. citizenship status, those H/L with U.S. citizenship living with high AL had a 2-fold increased risk of cancer death when compared to those with low AL (HR = 2.27, 95% CI = 1.20 - 4.31). Our preliminary findings highlight that H/L people with U.S. citizenship who experience high levels of chronic stress, have an increased risk of cancer mortality. H/L individuals with U.S. citizenship status may be associated with unhealthy assimilation over time. As H/L people assimilate, they may develop unhealthy behaviors and lifestyles common in the U.S., such as poor dietary habits, lack of physical activity, and increased exposure to environmental pollutants. These factors combined with the stress of navigating cultural integration, discrimination, and socioeconomic challenges, can possibly lead to increased AL and a high likelihood of developing chronic conditions, including cancer.

42-T

Impact of Rurality and Early-Onset Colorectal Cancer in the US: Geographic Disparities and Awareness

Grunert CR, Tsai MH, Rogers C, Howard S, Hogg-Graham R, Martin C, Conwell D, Toriola A, Bhakta A, Moore JX

Background: While overall colorectal cancer (CRC) rates have stabilized or declined in the United States (U.S.), early-onset CRC (EO-CRC) diagnosed before age 50 has increased. Rural U.S. residents face a higher CRC incidence compared to urban residents. Existing literature lacks comprehensive analysis of the influence of rurality and age at EO-CRC diagnosis. We sought to elucidate relationships between age at diagnosis with EO-CRC outcomes while examining the moderating role of rurality.

Methods: We used data from the 2006-2020 Surveillance, Epidemiology, and End Results (SEER) Program. Rurality was defined using census tract level U.S. Department of Agriculture's 2010 Rural Urban Commuting Area (RUCA) codes: rural (codes 8, 9, 10) and urban (all other listed codes). We conducted multilevel regression modeling (logistic and Cox proportional hazards) to examine the associations between age at diagnosis, rurality, and CRC outcomes (late-stage diagnosis and survival), adjusting for race, marital status, sex, and year of diagnosis.

Results: We analyzed data from 835,907 patients aged 20-79 from the 2006-2020 SEER program. After adjusting for marital status, race, sex, and diagnosis year, we found patients aged 30-39 (adjusted odds ratio [aOR]: 1.49, 95% confident interval [CI]: 1.44-1.55) and 40-49 (aOR: 1.43, 95% CI: 1.39-1.46) had more than a 40% increased likelihood of late-stage CRC compared to those aged 50-59. Patients aged 20-29 had a reduced risk of CRC death (aOR: 0.81, 95% CI: 0.77-0.86) compared to those aged 50-59. Conversely, patients aged 40-49 (aOR: 1.09, 95% CI: 1.07-1.11), 60-69 (aOR: 1.16, 95% CI: 1.14-1.17), and 70-79 (aOR: 1.39, 95% CI: 1.28-1.36) had increased risks of CRC death compared to those aged 50-59. Rural patients aged 20-29 (aOR: 0.79, 95% CI: 0.68-0.94) and 30-39 (aOR: 0.95, 95% CI: 0.87-1.03) had a reduced risk of CRC death compared to rural patients aged 50-59.

Conclusion: Our findings revealed patients aged 30-49 were more likely to be diagnosed with late-stage CRC compared to those aged 50-59, especially in urban areas. Future research should investigate urban-rural disparities to preventative medical services, including the role of healthcare infrastructure and provider availability, to develop effective strategies for impr

43-T

Indices of Neighborhood Disadvantage and Individual Cancer Control Behaviors among African American Adults

Fuemmeler BF, Boyle J, Miller CA, Ghosh D, Knott CL

Purpose: Emerging literature notes the importance of neighborhood-level factors for cancer control behaviors beyond that of individual factors. Markers of neighborhood-level disadvantage have been linked to greater likelihood of certain non-salutary cancer control behaviors. There has been less examination of many neighborhood factors simultaneously, which more accurately reflects individuals' daily neighborhood exposures. We estimated associations of neighborhood deprivation indices (NDI) with cancer control behaviors, identifying the relative importance of NDI components for these outcomes.

Methods: We used data from the Religion and Health in African Americans (RHIAA) study, a national probability sample of African Americans. We separately considered four screening and four prevention behaviors as outcomes.

We constructed NDIs using census tract-level data and estimated their associations with outcomes using Bayesian index models, adjusting for individual-level covariates. We reported odds ratios (OR), credible intervals, and exceedance probabilities (EPs).

Results: Participants in our sample engaged in relatively high levels of screening behaviors and lower levels of prevention behaviors. NDIs were significantly associated with greater likelihood of binge drinking (OR=1.13, EP=98.5%), smoking (OR=1.07, EP=99.4%), and insufficient colonoscopy (EP=99.9%), pap smear (EP=99.7%), and PSA (EP=99.1%) screening. Within the NDIs, median household income, percent without some college education, and percent unemployed received large estimated importance weights.

Conclusion: We identified significant associations between neighborhood disadvantage and non-salutary cancer control behaviors, as well as important NDI components for each outcome. These and similar findings from future studies should be used to target specific neighborhood factors for specific cancer control behaviors, rather than using a one-size-fits-all approach.

44

Informational Needs and Attitudes toward Pharmacogenomic Testing among Parents of Ethnically Diverse Pediatric Acute Lymphoblastic Leukemia Patients

Pereira S, Martinez A, Trotter P, Smith HS, Scheurer ME, Rabin KR, Bernhardt MB, Lupo PJ

There are significant disparities in survival rates for acute lymphoblastic leukemia (ALL), with Latino and Black patients having worse outcomes. These disparities may be partially due to germline variability in drug metabolizing enzymes and transporters responsible for drug disposition. Pharmacogenomic (PGx) testing, which examines an individual's DNA to assess their physiological reaction to certain medications, may have significant clinical utility for this patient population. Yet, research has shown that patients and parents have concerns about PGx testing, and parents of Latino ethnicity may have distinct or accentuated considerations when making decisions about PGx testing. We interviewed parents of children with ALL from ethnically diverse backgrounds (current n=6; goal n=30) to explore their attitudes toward PGx testing and their informational needs and preferences for results.

Preliminary results show parents believed PGx testing may aid in identifying the most effective medication for their child's treatment, preventing negative side effects by avoiding certain medications, and overall improving treatment outcomes. However, parents expressed concerns about the privacy and confidentiality of the results and test accuracy. Some parents expressed a need for information on how testing is conducted as well as its potential negative impacts before deciding to use PGx testing. When asked about results disclosure, parents emphasized their preference for in-person communication rather than having a virtual assistant or chatbot relay PGx results. Despite expressing that they were not interested in virtual assistance for results disclosure, a few parents suggested they would utilize such a system as an educational feature.

45-T

Investigating Cancer Outcomes in Virginia's SWANA Community with Surname-Based Machine Learning

Shahab GH, Tossas KY, Barnes AJ

Purpose: This study seeks to develop and validate the effectiveness of a SWANA Surname Algorithm (SSA) in identifying South West Asian and North African (SWANA) patients within cancer registry data to inclusively evaluate cancer burden by race/ethnicity among Virginia adults.

Methods: We developed and validated an algorithm to predict whether a surname belongs to a person of SWANA descent using phonetic, linguistic, and feature-engineered attributes. Data from Virginia birth and death certificates (1995-2020, N=340,855) were used to develop a SWANA Surname List (SSL) (N=17,712). This SSL was cross-referenced with patient data from the Virginia Cancer Registry (1995-2020, N=1,419,833). An XGBoost model was trained with hyperparameter tuning, optimizing for the area under the curve (AUC). Model performance was evaluated using confusion matrices and accuracy metrics. Cancer outcomes were analyzed, adjusting for sex, age, marital status, insurance, tobacco use, alcohol use, and time.

Results: The best model achieved an accuracy of 95.2%, sensitivity of 55.6% and specificity of 99.3%. Preliminary analysis using the SSL identified 1.7% of cancer patients as potentially SWANA, with an increasing trend over time. SWANA individuals had a 23.1% chance of late-stage diagnosis, while the probability of late-stage diagnosis decreased for White patients by 0.4% with the addition of SWANA. Black patients showed the highest likelihood of late-stage diagnosis, significantly different from White (P<0.05).

Conclusions: The XGBoost model demonstrated high accuracy and specificity in predicting SWANA origin surnames, though sensitivity was moderate. Misclassification of SWANA ethnicity may obscure important cancer outcome disparities for SWANA and other racial groups. This methodology could be used to disaggregate race and ethnicity across SWANA and other racial groups in the absence of granular racial/ethnic data. Future work will improve this algorithm using natural language processing

(NLP) techniques and deep learning models to bolster classification accuracy and feature extraction. We will conduct comprehensive analyses on cancer outcomes, including late-stage diagnosis and disease-free survival, to better understand the true landscape of cancer disparities to include SWANA.

46-T

Investigating the Role of Race/Ethnicity on the Association between Neighborhood Deprivation and Breast Cancer Outcomes among Kentucky Breast Cancer Patients years 2010-2022

Walker BE, Pollard E, Howard SP, Jones JM, O'Connor K, Durbin E, Hull P, Jones S, Adegboyega A, Wang X, Owen W, Szabunio MM, Williams LB, Moore JX

Purpose: As Kentucky falls within the top five leading states for breast mortality nationwide, this study investigates the association between neighborhood socioeconomic disadvantage and breast cancer outcomes, including surgical treatment, radiation therapy, chemotherapy, and survival, and how these associations vary by race and ethnicity in Kentucky.

Methods: We conducted a retrospective cohort analysis using data from the Kentucky Cancer Registry (KCR) for breast cancer patients diagnosed between 2010 and 2017, with follow-up through December 31, 2022. We linked Kentucky Cancer Registry data with census tract data to examine the relationship of Area Deprivation Index (ADI) on breast cancer outcomes. Multilevel logistic regression and Cox Proportional Hazards models were used to analyze binary outcomes and time-to-event data, respectively.

Results: Women in the most disadvantaged quartile (ADI 4th quartile) were more likely to be Non-Hispanic Black, Appalachian residents, current tobacco users, divorced using government insurance, and have invasive breast cancer diagnosis when compared with women in the least disadvantaged quartile (ADI 1st quartile). Compared to women in the least disadvantaged neighborhoods, women living in the 4th quartile were 36% more likely to die from breast cancer (HR: 1.36, 95% CI: 1.16-1.60). Women in the 4th quartile were also more likely to be diagnosed at later stages (aOR: 1.03, 95% CI: 1.02 - 1.05). When examining race-stratified risk of breast cancer death in our patient population we observed Non-Hispanic Black women had an increased risk of breast cancer death if they lived in more disadvantaged neighborhoods (HR: 1.46, 95% CI: 0.90-2.37). These associations were all observed after adjusting for age, race, tobacco use, marital status, insurance status, family history and residence in Appalachia.

Conclusions: Women in disadvantaged neighborhoods had significantly higher odds of late-stage diagnosis and breast cancer death, regardless of race, indicating that neighborhood factors contribute to breast cancer disparities. This study underscores the critical role of socioeconomic and neighborhood factors in breast cancer outcomes, suggesting the necessity for targeted interventions.

47-T

Mammography Concordance among Sexual Minority Individuals at Elevated Risk of Breast/Chest Cancer: Examining the Roles of Race and Healthcare System Distrust

Masterson, KM, Norris, AH, Meadows, RJ, Padamsee, TJ

Purpose: We examined the associations between healthcare system distrust (HCSD), sexual minority identity, and race to determine how they are related to mammography screening concordance rates among people at objectively elevated risk for breast/chest cancer (BC). We further sought to determine whether HCSD mediated the relationship between sexual minority identity and mammography concordance.

Methods: We used survey data from the high-risk subsample of The Daughter Sister Mother Project survey. Participants were 18-75, non-Hispanic, white or Black/African American, identified as "female", had ≥20% lifetime risk of BC, and had no prior history of cancer. Mammography concordance was defined as having reported receipt of a mammogram within the last year if recommended according to National Comprehensive Cancer Network guidelines for women at high risk. We used two-sample t-tests to compare mean HCSD scores (measured with the Revised HCSD Scale) by sexual minority identity and race. We used linear and logistic regression to estimate bi- and multivariable associations with HCSD and mammography concordance separately. Finally, we conducted a traditional mediation analysis to determine whether HCSD mediated the association between sexual minority identity and mammography concordance using Baron and Kenny's four-step approach.

Results: There were 402 participants included in this analysis (9.2% sexual minority, 90.8% straight; 31.1% Black, 68.9% white). Sexual minority participants scored on average 1.90 points higher on the HCSD scale ($p=0.004$) and had 0.64 times the odds of mammography concordance ($p=0.233$) compared to heterosexuals, adjusting for age and race. Black participants scored on average 2.81 points higher on the HCSD scale ($p<0.001$) and had 0.42 times the odds of mammography concordance ($p<0.001$) compared to whites, adjusting for sexual minority identity and age. HCSD did not meet the criteria for a mediator.

Conclusion: Sexual minority participants and Black participants had greater HCSD, and lower odds of mammography concordance compared to heterosexual and white participants, separately. Further research is needed to implement systems and policies that mitigate the harmful effects of homophobia and racism within the healthcare system.

48-T

Mapping Disparities in End-of-Life and Palliative Care for American Indians and Alaska Natives with Cancer: A Scoping Review

Fariman S, Begay J, Emerson M, Wheeler SB, Bell RA

Purpose: To identify the key disparities in access to and utilization of end-of-life (EOL) and palliative care services for American Indian and Alaska Natives (AIANs) with cancer in the US.

Methods: Following Arksey and O'Malley's framework, we conducted a comprehensive search in PubMed/MEDLINE, Embase, and Scopus in Feb 2024, and included peer-reviewed, English-language studies reporting quantitative estimates related to EOL and palliative care for AIANs with cancer, compared to other races, usually non-Hispanic Whites (NHW). Records were examined by two independent reviewers and discrepancies were resolved through consensus. Data extraction was performed iteratively by two independent reviewers as per a pre-established data abstraction form.

Results: Our search yielded 1,307 records, with 102 screened as full texts. Due to limited reporting of AIAN-specific estimates, 13 studies met the inclusion criteria. All studies were retrospective cross-sectional or longitudinal analyses, often with small sample sizes and/or susceptible to biases. All studies used multivariable logistic regression to provide adjusted measures for disparities (e.g. adjusted odds ratio), and there was substantial variation in covariates controlled for. All studies used national datasets, including CDC WONDER (n=6), SEER Medicare (n=3), National Cancer Database (n=3), and HealthCare Utilization Project (n=1), and did not address within-AIAN differences. Outcomes were heterogenous: Compared to NHWs, AIANs reported (i) significantly lower rates of death in home or hospice and higher rates of death in medical facilities (n=7), (ii) significantly lower rates of hospice utilization (n=2), and (iii) significantly lower rates of anxiolytic medication use (n=1), but (iv) no differences in receipt of palliative care (n=3), and (v) no differences in treatment aggressiveness at EOL (n=1).

Conclusions: Lower rates of hospice utilization and higher rates of death in medical facilities were identified as the most prominent EOL care disparities for AIANs with cancer. Studies should explore the impact of regional and tribal variation in access to hospice care (e.g. due to rurality and insurance coverage) and the cultural implications for improving the delivery of appropriate EOL care.

49

Mediating Effects of Social Determinants of Health and Community Factors on the Association Between Race and Breast Cancer Mortality

Lu XA, Zheng T, Moore JX

Purpose: We sought to explore how Social Determinants of Health (SDoH) mediate the relationship between race/ethnicity and breast cancer outcomes, including late-stage diagnosis, surgery, radiation treatment, chemotherapy, and breast cancer-specific survival.

Methods: We performed a retrospective analysis of 739,448 breast cancer patients from the Surveillance, Epidemiology, and End Results (SEER) 18 registries from 2000 to 2016. We compared relative odds/risks for late-stage diagnosis, surgery, radiation therapy, chemotherapy, and breast cancer deaths to NH-White patients for non-Hispanic Black (NH-Black), non-Hispanic Asian/Pacific Islander (API), and Hispanic female patients. We also examined the mediating role of SDoH defined as measures of the Social Vulnerability Index (SVI) and county-level characteristics on the relationship between race-ethnicity and cancer outcomes.

Results: Compared with NH-White patients, NH-Black patients were 23% more likely to have a late-stage diagnosis, at 48% higher risk of breast cancer deaths, with reduced likelihood in treatment receptions except for chemotherapy. API patients had a 42% lower risk of breast cancer deaths and a lower likelihood of receiving all treatments. Hispanic patients were 22% more likely to have a late-stage diagnosis and at 17% higher risk of breast cancer deaths, with reduced likelihood in treatment receptions except chemotherapy. Among NH-Black patients, the ratio of population to primary care physicians was the most significant mediator. Breast cancer deaths among API patients were similarly affected by most county-level characteristics. Among Hispanic patients, the ratio of population to primary care physicians contributed the most mediating effect.

Conclusion: NH-Black and Hispanic patients faced significant disparities in late-stage breast cancer diagnosis and survival rates, with the ratio of population to primary care physicians as a key mediator across all groups. Healthcare access, quality, and lifestyle factors significantly mediated the association between API race and breast cancer mortality, necessitating targeted interventions.

50

Mediating Role of Health-Related Contextual Factors on the Relationship between Sexual Minority Individuals Living with High Allostatic Load and Risk of Cancer Mortality

Patel AN, Moore JX, Spears M, Casanova TN, Shelton BJ, Weiss HL, Langston ME, Watts KJ, Boyd DT, Adsul P, Duncan MS

Purpose: Sexual minorities (SM) may have higher cancer risk attributable to health-related contextual factors (HRCF). SM people have higher chronic physiological stress, or allostatic load (AL) compared to their heterosexual peers. Furthermore, SMs with high allostatic load (AL) have more than twice the risk of cancer mortality than heterosexuals with high AL. Here, we examined the mediating effects of HRCF on the relationship of SM identity and AL with cancer mortality risk.

Methods: We performed a retrospective analysis of 2001-2010 data from 12,470 participants in the National Health and Nutrition Examination Survey (NHANES) linked to follow-up data from the National Death Index through 2019. We performed survey-weighted Cox regression to assess the association of SM identity/AL with cancer mortality risk. We examined the mediating effects of HRCF including household income, self-reported general health condition, routine health access, mental health professional visits within past year, location of healthcare visits, self-reported prior health condition, and the number of health visits within past year.

Results: When adjusting for sociodemographic factors including age, race/ethnicity, education status, and gender, SM adults with high AL had a 3.3-fold increased risk of cancer mortality compared to heterosexual adults with low AL (adjusted HR: 3.31, 95% CI: 1.77 - 6.16). The following factors all slightly mediated the relationship of SM status and high AL with cancer mortality risk: household income (% mediated = 12.35, $p < 0.01$), seeing a mental health provider within past year (% mediated = 9.88, $p < 0.05$), greater number of healthcare visits within past year (% mediated = 8.31, $p < 0.05$), and poor self-reported general health condition (% mediated = 14.08, $p < 0.05$).

Conclusion: Among a nationally representative sample of more than 12,000 US adults, we observed many HRCF significantly mediate the relationship of SM status and high AL with cancer mortality risk. These results can help inform the identification of intervention points to reduce health disparities.

51

Meet Them Where They Are: Using A Mobile Clinic to Increase Prostate Cancer Screening with the Lower Alabama Prostate Outreach Program

McNair CC, Lowman JA, Starks SP, Silbernagel EM, McGowen CL, Diaz BE, Cadden JA, Jaye SW, Wright N, Keel CE, Pierce JY

Purpose: The purpose of this study was to pilot a grant-funded prostate cancer screening program to underserved men in Lower Alabama through a community outreach mobile clinic conducting prostate-specific antigen (PSA) tests.

Methods: Community outreach staff contacted their well-established networks of community leaders in underserved areas in Lower Alabama to schedule PSA testing events using a mobile clinic vehicle. At the events, men were screened for income and risk eligibility based on CDC guidelines: self-reported household income at/below 250% of the federal poverty level and uninsured or under-insured; high risk ages 40-49 years old, average risk ages 50-69 years old, 70-75 years old with >10-year life expectancy. Eligible men were registered in the electronic medical record system. Blood was drawn by registered nurses and medical assistants and laboratory protocols were followed to transport samples to the testing facility at the end of the event. PSA test results were relayed to all patients and patients with abnormal results were contacted by a nurse navigator and followed forward to appropriate follow-up. Repeat PSA testing, ultrasound, MRI, and biopsy were performed as indicated.

Results: Fourteen events were held over 7 weeks with 171 men screened; median screened per event was 12 men, range 4-29. 99.4% were African American, 23.9% were rural, median age 57 years old (range 41-75). Twelve men (median age 64 years and 7.0% of men tested) had elevated PSA test results and were referred for follow-up care. Two men had biopsies for which the pathology resulted in Stage T1c prostate adenocarcinoma; 6 men were pending follow-up testing at the time of submission. Three of the 14 event locations were in rural areas based on Federal Office of Rural Health Policy definitions; 50% of abnormal PSA test results were in men residing in rural areas.

Conclusions: Using a mobile community outreach clinic to bring PSA testing to underserved communities is an effective prostate cancer screening approach, providing early detection and earlier treatment.

52

Mixed Methods Catchment Area Needs Assessment: Cancer among Black Iowans

Nash SH, Williams G, Huang H, Schmidt M, Sittig K, Askelson N.

Purpose: To conduct a mixed methods study exploring Black and African American (hereafter Black) Iowans' cancer burden, risk/protective factors, and barriers to cancer prevention and treatment services.

Methods: We conducted secondary descriptive analyses of cancer registry, risk/protective factor, and social drivers of health data; all these data were accessed through Cancer InFocus Iowa. We conducted key informant interviews (n = 13) with individuals able to speak about needs and barriers to care among Iowa's Black immigrant, and African American populations.

Results: Because of the small size of Iowa's Black population, cancer rates and sociodemographic data were often suppressed at the county level. However, we were able to identify counties with the highest proportion of Black residents (range 0-9.6%); as well as high cancer incidence (range 295 - 856/100,000; 84/99 counties suppressed) and mortality (range 157-248/100,000; 94/99 counties suppressed) rates, % Black population uninsured (range 0-28.9%) and living below poverty (range 0-100%), and racial segregation (range 52.6-95.5%). Key informant interviews highlighted several needs, including the need for greater visibility of inclusive community resources and greater cultural sensitivity in service provision. However, we also identified psychological resiliencies, including adaptive coping strategies and self-efficacy in advocating for personal and family needs. Needs differed between Black immigrant and African American populations.

Conclusion: Black Iowans have substantially higher incidence of and mortality from cancer than their non-Hispanic white (NHW) counterparts. Information gleaned from this needs assessment will be shared with Holden Comprehensive Cancer Center leadership and cancer control partners to inform research and prevention and control programming to address cancer disparities affecting Iowa's Black population. Future efforts may focus on data collection for counties or areas with small populations and suppressed information.

53

Mobile vs. Stationary: A Comparative Analysis of Mammography Data Across a Mobile Cancer Screening Unit and its Health System Static Site Counterparts

Pham KM, Kaiser N, Bradley K, Robles L, Giamboy Jr. R, Jewell L, Vogel K, Khaldoun H, McNair C, Sifat MS, Leader AE

Purpose: Mobile cancer screening programs have emerged as critical tools for addressing healthcare disparities by bringing services directly to communities with access barriers. The Sidney Kimmel Comprehensive Cancer Center (SKCCC) Mobile Screening Unit (MSU) provides breast cancer screenings to underserved populations in the Greater Philadelphia region. The MSU aims to increase access to cancer screening and follow-up care, particularly among those at increased cancer risk due to adverse social determinants of health.

Methods: Data were sourced from the Jefferson electronic medical record system fully integrated across both the MSU and static sites. The inclusion criteria focused on patients aged 40+ who had a mammogram since September 2021 (MSU launch) to the present. Demographic and outcome variables, such as age, race/ethnicity, insurance status, and socioeconomic status, were compared. Descriptive statistics (means and frequencies) were applied to analyze differences and assess MSU impact.

Results: Analysis shows key demographic differences between patients at the MSU (N = 3,054) and static sites (N = 315,862). The MSU engages a higher proportion of minority backgrounds (74.1% vs 35%) and those without insurance (19.8% vs 4.5%). The MSU captures a higher percentage of first-time mammograms (25% vs 5.2%). Breast Imaging Report and Data System (BIRADS) results across sites were also analyzed. BIRADS 1 results are comparable (74.5% and 70.5%), whereas BIRADS 0 findings seem to be higher for MSU screenings (17.3% vs 7.7%) and BIRADS 2 findings higher for static sites (8.1% vs 21.7%). Positive diagnoses of breast cancer across the MSU and static sites are also similar (1.3% vs 0.8%).

Conclusion: The findings indicate that the MSU effectively reaches hard-to-reach populations. The demographic differences highlight the MSU's role in addressing healthcare disparities by bringing essential screening services directly to underserved communities. Future analyses will examine statistical differences between these groups and examine further disaggregated data of racial groups. Future efforts should focus on optimizing mobile screening strategies and further assessing their long-term impact on cancer prevention and early detection among diverse populations.

54

Nativity Differences in Awareness and Knowledge About HPV Infection and Vaccination Among Foreign- And US-Born Asians: Findings from a National Population-Based Sample

Chiang SC, Wang H, Sifat MS, Ma P

Introduction: Asian-Americans have been documented to have low human papillomavirus (HPV) vaccine initiation and completion. However, Asians in the US are a non-homogenous population, with significant differences by nativity, particularly between the US-and foreign-born individuals. This study examined awareness and knowledge of HPV and HPV vaccine awareness among foreign-born Asians, US-born Asians, and US-born non-Hispanic Whites.

Methods: We analyzed data from the Health Information National Trends Survey (HINTS) 5, cycles 1 (2017) and 2 (2018), the most recent HINTS datasets with nativity information. Weighted descriptive statistics and multivariable regressions were performed to compare HPV/ HPV vaccine awareness (e.g., heard of HPV), knowledge (e.g., HPV can cause cervical cancer) and information seeking behaviors among the three groups (total unweighted N=3,747).

Results: Over 60% of foreign-born Asians had not heard of HPV, compared to 30% of US-born Asians ($P < 0.01$) and 32% of non-Hispanic Whites ($p < 0.01$). Similarly, HPV vaccine awareness was lower among foreign-born Asians than US-born Asians (63% vs. 33%, $p < 0.01$), and non-Hispanic whites (63% vs. 29%, $p < 0.01$). Among participants who have heard of HPV, less than 40% knew that HPV can cause penile, anal, or oral cancers across all groups (ranges 26%-39%). Foreign-born Asians were also more likely to agree that “There’s not much you can do to lower your chances of getting cancer” compared to non-Hispanic Whites (M=2.76 vs M=3.02, $p<0.001$). Both foreign-born Asians (46%) and US-born Asians (38%) were significantly more likely to consume health-related videos on YouTube compared to non-Hispanic Whites (26%) (all $p <.001$).

Conclusion: There are significant nativity-related differences in awareness of HPV/ HPV vaccine and knowledge among Asians residing in the US. Particularly, findings suggest HPV-related awareness deficits among foreign-born Asians, highlighting a need for culturally tailored HPV prevention efforts that align with their unique health information-seeking behaviors.

55-T

Navigating Housing Instability During Cancer Treatment: Qualitative Insights from Young Adult Cancer Patients

Moore HG, Marin P, Kaslander JN, Ochoa-Dominguez C, Banegas MP, Miller KA

Purpose: To qualitatively examine housing instability (including homelessness, frequent moves, or precarious housing situations) among young adult cancer patients (YAs; diagnosed age 18-39).

Methods: We recruited YA cancer patients participating in an R01 study who reported high levels of housing instability and worry. Semi-structured interviews were conducted to elicit patients’ lived experiences and perceptions of barriers and resources related to housing needs. Thematic analysis of transcripts was conducted using the Braun and Clarke (2006) method.

Results: Participants’ (N=10) median age was 33 years (range: 21-38), and 60% (N=4) were female. Participants reported diverse racial/ethnic backgrounds, with 50% identifying as Hispanic/Latinv© (N=5). Cancer diagnoses included cervical (N=2), thyroid (N=2), testicular (N=2), brain/CNS (N=2), ovarian (N=1), uterine (N=1), and sarcoma (N=1). Half (N=5) were currently undergoing cancer treatment at interview.Four major themes were identified: (1) Experiencing housing precarity: “It’s really stressful because I worried that I would have to move into my family’s house again and I really don’t want to separate from my domestic partner.” (2) Coping strategies/adaptive behavior: “If that [sick-day donation at work] was not an option, we would have had issues…if my cancer comes back, I can’t use that program again.” (3) Sustaining psychological impacts: “I was super stressed, and my mom helped me out a lot. I still feel like I’m not emotionally ok, and [that] I live in fear.” (4) Addressing housing needs with medical providers: “I didn’t think I was meant to share my [housing] issues. You know, they [the doctors] are busy. They got other stuff going on. They were looking at scans and talking about medications.”

Conclusions: Housing instability is a significant, yet often unaddressed, aspect of the cancer experience for young adults, contributing to psychological distress and complicating treatment adherence and survivorship. Participants employed adaptive strategies to manage housing instability, yet experienced emotional burden. Our findings highlight the importance of integrating social needs screening and referral programs into oncology care for YAs to address unmet housing needs.

56-T

Navigating Social Influences: Differential Effects of Perceived HPV Vaccine Disapproval from Friends and Family on College Students' HPV Vaccination Intentions

Pierce JD, Xu YA, Hall N, Anderson K, Wong CCY, Dawkins-Moultin L, Lu Q.

Purpose: This study applies the Information-Motivation-Behavioral Skills (IMB) Model to explore how perceived HPV vaccine disapproval from family and friends affects vaccination intent among unvaccinated college students.

Methods: A sample of 728 unvaccinated young adults aged 18-26 from four Texas universities completed a baseline survey as part of a randomized controlled trial aimed at increasing HPV vaccine uptake. Two parallel path analyses examined the influence of perceived disapproval from family and friends on vaccination intent, with self-efficacy, beliefs about limited sexual activity reducing vaccination need, and intent to consult a doctor as mediators, while controlling for demographics. Saturated models incorporated all direct paths and covariances, and non-significant paths and covariances were trimmed following established procedures. The final models showed excellent fit (TLI ≥ .90, CFI ≥ .90, RMSEA ≤ .08).

Results: Perceived disapproval from family and friends was negatively associated with self-efficacy ($\beta = -0.09$, $p = .016$ for family; $\beta = -0.09$, $p = .030$ for friends) and positively linked to beliefs that limited sexual activity reduces vaccination need ($\beta = 0.136$, $p < .001$ for family; $\beta = 0.151$, $p < .001$ for friends). Only perceived friend disapproval was negatively related to intent to consult a doctor ($\beta = -0.075$, $p = .046$). Path analyses revealed that friend disapproval negatively influenced vaccination intent indirectly through reduced self-efficacy, weaker intent to consult a doctor, and stronger beliefs that limited sexual activity reduces vaccination need (total indirect effect $\beta = -0.079$, $p = .005$). Family disapproval negatively impacted intent indirectly via reduced self-efficacy and stronger beliefs that limited sexual activity reduces vaccination need (total indirect effect $\beta = -0.050$, $p = .003$).

Conclusions: Anticipated disapproval from family and friends affects young adults' vaccine decision-making in similar but distinct ways, shaping specific vaccination-related skills and perceptions. Interventions should address family and friend influences separately, employing strategies that recognize how each source uniquely shape skills and perceptions part of the HPV vaccine decision-making process.

57-T

Neighborhood Deprivation and Suicide among Adolescent and Young Adult Cancer Patients

Das A, Byrne CA, Oddo VM, Goldman-Mellor S, Kim SJ

In 2024, approximately 84,100 adolescent and young adults (AYAs) between 15-39 years old will receive a cancer diagnosis. Given their unique psychosocial, economic, and clinical stressors, we examined whether AYA cancer patients living in deprived neighborhoods have a higher risk of suicide when compared to those in the least deprived neighborhoods. Our sample comprised 486,374 AYA cancer patients from the Surveillance, Epidemiology, and End Results (SEER 22) dataset between 2006-2020. We use Cox proportional hazard models to test the association between quintiles of neighborhood deprivation and survival months until suicide mortality from the time of cancer diagnosis. We found that AYA cancer patients living in more deprived neighborhoods have a higher risk of suicide when compared to those in the least deprived neighborhoods (Q5) (Q1: HR - 1.82 (1.14-2.90); Q2: HR - 1.95 (1.35-2.81); Q4: HR - 1.48 (1.05 - 2.07)). Mental health services and monitoring from treatment through survivorship may support suicide prevention efforts for these patients. Implementation of AI suicide prediction models within health systems may also identify AYA cancer patients at elevated risk.

58

Neighborhood Disadvantage and Cardiovascular Mortality Among US Colorectal Cancer Patients

Valvi N, Groenewold M, Read T, Yang J, Braithwaite D, Karanth S

Purpose: A critical knowledge gap exists as to whether disparities in mortality among colorectal cancer patients remain after accounting for sociodemographic, tumor, and treatment characteristics. This study aimed to evaluate the association between neighborhood socioeconomic status (SES) and cardiovascular-specific mortality among adults diagnosed with colorectal cancer, utilizing a national database.

Methods: This national retrospective cohort study included adults (20 years and older) diagnosed with primary colorectal cancer between 2006 - 2017 from National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) 18 Census tract-level socioeconomic status and rurality database and survived for >12 months. Neighborhood disadvantage was assessed by Yost index quintiles (1=lowest SES to 5=highest SES). Five-year relative survival rates per 100,000 were calculated using SEER*Stat. Cardiovascular disease (CVD) mortality was examined using a competing risk cause-specific hazard model for Hazard ratios (aHR) and 95% confidence intervals (CIs) adjusted for age, sex, race/ethnicity, marital status, SEER-summary stage, subtype, receipt of treatment and year of diagnosis. Effect modification was conducted by age, sex, and race/ethnicity.

Results: Of the 261,050 eligible adults with primary colorectal cancer in this study, 92,618 died during the follow-up (median 55.0, IQR 29.0 - 94.0). Most adults were <65 years old (50.8%), male (52.2%), and non-Hispanic White (65.7%). CVD was the most common non-cancer cause of death, accounting for 11.2% of total mortality. The overall 5-year relative survival rates were 49.4% (95% CI: 49.0-49.8) for the lowest SES quintile and 39.2% (95% CI: 39.0-39.5) for the highest SES quintile. After adjustment of covariates, CVD-specific mortality was significantly increased in the lowest SES (aHR: 1.42, 95% CI: 1.28-1.57) compared to those with the highest SES quintile. We found strong evidence of effect modification by age (p <.0001).

Conclusions: Our findings suggest socioeconomic disparities in CVD mortality among individuals with colorectal cancer. This study provides a basis for developing potential interventions for cardio-oncological risk management and could help clinicians enhance patient care and improve outcomes.

59

Occurrence and Cancer-Specific Patterns in Pre- and Post-Cancer Comorbidities: A Longitudinal Study in the All-of-Us Research Program

Lee JA, Pakpahan R, Amante D, Gerber B, Yang L

Background: Comorbidities worsen cancer survival. However, the longitudinal patterns of existing and newly onset comorbidities before and after cancer are unknown, precluding early interventions targeting high risk populations to improve cancer survivorship.

Methods: We investigated comorbidity occurrence among cancer survivors using self-reported data from a personal health history survey and clinical diagnoses data from electronic health records in the All-of-Us program's national database. Exploratory analyses were used to describe the prevalence of self-reported pre-existing comorbidities among cancer survivors (n=20,534) and non-cancer adults (n=113,628). Prevalence of clinically diagnosed pre-existing (n=26,978) and incidence of newly onset comorbidities (n=9,174) were estimated among and by the 11 most common cancer types. Quasi-Poisson regressions were modeled to evaluate the disparities in comorbidities occurrence by race (White, Black, Asian, Others) adjusted for age.

Results: Exploratory analyses identified the eight most common chronic conditions—hypertension, osteoarthritis, neuropathy, depression, obesity, type 2 diabetes, sleep apnea, and kidney stones—by their relevancy to the major human health systems. Pre-existing hypertension affects 35-54% of cancer survivors, whereas a history of kidney stones affects 3-11% of cancer survivors, depending on the cancer type. Post-diagnoses, over 25% of cancer survivors developed two or more new comorbidities during the first 5 years of survival. Cancer survivors of the black race were disproportionately affected by comorbidities. Notably, in breast, prostate, blood, and thyroid cancers, the incidence rate ratio (IRR) for cancer survivors of the black race is 1.47, 1.25, 1.39, and 1.52, respectively, compared to those of the White race in the first five-year survival.

Conclusion: A high burden of newly onset comorbidities affects all survivors, but certain cancer types appear to be more susceptible than others. Significant racial disparities were observed in both pre-existing and newly onset comorbidities among cancer survivors. Equitable risk stratification strategies are needed for monitoring, early detection, and early intervention to prevent newly onset comorbidities and enhance cancer survivorship.

60-T

Pediatric Melanoma in Hispanic Populations: Disparities in Presentation, Treatment Delays, and Insurance Coverage

Duran SA, Nguyen KA, Zinn ZA

Purpose: Our study aims to examine ethnic disparities in the presentation, delays in treatment, and insurance status between Hispanic and Non-Hispanic White patients with pediatric melanoma.

Methods: The National Cancer Database (NCDB) was used to query patients with pediatric melanomas from 2004 to 2021. Patients who were of Hispanic and Non-Hispanic White racial origin were stratified into separate cohorts, and clinical characteristics such as age of onset, sex, histologic type, primary site location, insurance status, and disease stage were evaluated. Student t-test and Chi square were used to evaluate for differences in clinicopathological characteristics between the two cohorts.

Results: Hispanic patients had a younger mean age of onset (10.7 years old vs 13.0, p<0.001), a higher proportion of Spitzoid tumors (8.6% vs 4.5%, p=0.0001), primary site on the extremities (56.1% vs 39.7%, p=0.0008), and advanced disease stage (32.5% vs 24.0%, p=0.0007) than Non-Hispanic Whites, p<0.001. Non-Hispanic Whites had higher proportions of private insurance than Hispanic patients (81.1% vs 49.6%, p < 0.001). In addition, Hispanic patients experienced delays in time to treatment with a mean of 23.1 days from diagnosis, compared to 11.2 days for Non-Hispanic Whites (p=0.0038).

Conclusions: Our results demonstrate that Hispanic patients experience delays in the treatment of pediatric melanoma despite younger age of onset and advanced stage on presentation. Differences in insurance status and reduced access to care may contribute to these findings. As the U.S. Hispanic population continues to grow, raising awareness of existing healthcare disparities is essential to improving the overall quality of care.

61

Perspectives on Sexual Orientation and Gender Identity Data Collection from Healthcare System Staff and Leadership: Case Study in an Academic Hospital Setting

Guan A, Duffy C, Loya Z, Wadhwa M, Gomez SL, Shariff-Marco, S

Introduction: Collecting Sexual Orientation and Gender Identity (SOGI) data in healthcare settings is vital to understand the health needs of LGBTQ+ patients. Despite national calls to implement SOGI data collection practices, adoption remains low. Perspectives from all levels of healthcare operators - including administrators and leaders - will be critical for successful and systematic adoption. In this study, we describe SOGI data collection efforts in a large academic medical center, including its NCI-designated comprehensive cancer center, and share perspectives from healthcare system operators.

Methods: We evaluated the feasibility of a passive rollout of SOGI questions in EHR systems by examining trends in responsiveness to questions about sexual orientation, gender identity, pronouns, and sex assigned at birth. Additionally, we held key-informant interviews and informational meetings with healthcare operators, through which we sought to understand experiences with SOGI data collection, comfort/willingness to collect these data, and challenges in broad implementation.

Results: While data completeness increased for all SOGI questions in the healthcare system overall between 2018 and 2022, there were more substantial improvements among cancer center patients (3.9% to 69.1% for sexual orientation, 5.3% to 77.5% for gender identity). The healthcare operators we interviewed recognize the benefits of SOGI data collection to foster respect and personalize healthcare. However, most participants shared that providing/having trainings on SOGI data collection (e.g., modeling provider/patient interactions, educational materials) would enhance their comfort with discussing these topics. Key challenges included data accuracy, establishment of workflows for when/how/by whom SOGI data should be collected and ensuring that data are meaningfully used.

Conclusion: We demonstrated that the collection of SOGI data in EHR systems is a feasible and critical first step for adoption of systematic processes. However, we recommend the simultaneous adoption of trainings and tailored resources to enhance staff comfort, the implementation of flexible approaches to data collection, and sufficient establishment of workflows.

62-T

Racial Disparities and Time to Breast Cancer Surgery

Shadi Azam, Anjile An, Edward Gemson, Kevin Kensler, Vivian Bea, Rulla Tamimi

Background: Racial disparities and social determinants of health (SDoH) are recognized as significant contributors to breast cancer patients' disease management. Delays in surgical treatment for breast cancer can have significant implications for patient outcomes.

Purpose: We investigated the associations between racial disparities and SDoH with time to surgical treatment among newly diagnosed breast cancer patients across the New York City (NYC) region over the past 10 years.

Method: Leveraging the INSIGHT Clinical Research Network, the study analyzed data from 20,967 NYC patients, including female breast cancer patients (≥18 years) who had surgery between 2007-2021. Majority of women had lumpectomy (79%) and 21% had mastectomy as the first surgical treatment. Surgical delay was defined as the first surgery ≥60 days post-diagnosis. Information on age and race/ethnicity were from Electronic Health Record data and SDoH were examined using zip-code of residence data. Multivariate logistic regression adjusted by age at diagnosis, BMI, household income quartile, unemployment quartile, and Charlson comorbidity index, examined the association between race/ethnicity and surgical delays.

Results: The median age at diagnosis was 60 years. We had a diverse population of women including non-Hispanic Black (13.1%), Hispanic (12.4%), non-Hispanic Asian/Native Hawaiian (6.41%), and non-Hispanic White (48.4%). About 83.5% received surgery within 60 days of diagnosis, while 16.50% had surgery after 60 days. There were significant disparities by race/ethnicity in relation to surgical delays. Multivariable models showed that non-Hispanic Black patients had the highest risk of having surgical delay (OR=1.70, 95%CI=1.49-1.94) relative to non-Hispanic White; followed by Hispanic (OR=1.48, 95%CI=1.29-1.69) and Asian/Native Hawaiian (OR=1.24, 95%CI=1.05-1.46). Several SDoH including low neighborhood household incomes, unemployment rates, low levels of education were also associated with higher risk of delays.

Conclusion: Non-Hispanic Black, Hispanic, and Asian/ Native Hawaiian breast cancer patients experienced more frequent surgical delays than non-Hispanic White patients. Additionally, SDoH factors and lower neighborhood socioeconomic status contributed to these delays.

63

Racial Disparities in Survival Among National Breast and Cervical Cancer Early Detection Program Participants and Non-Participants

Adams SA, Mays J, Gonzalez J, Ategbole M, Cook J, Felder TM, Babatunde O

Purpose: To examine racial survival disparities among participants in South Carolina's Best Chance Program (BCN, the National Breast and Cervical Cancer Early Detection Program) and non-participants.

Methods: The SC cancer registry, between 2000 to 2010, was used to compose a cohort of breast cancer survivors, age 65 years or younger. The cohort included individuals with Medicaid or private insurance. Vital status, survival time, and cause of death were determined from state records. We calculated overall and disease-free survival using Kaplan Meier plots in SAS v9.4 stratified by race and BCN participation.

Results: In this young breast cancer cohort, only 2% (N=40) of deaths occurred from causes other than breast cancer. The overall and disease-free survival did not vary greatly, therefore, disease-free survival is presented. The median disease-free survival in the overall cohort was 83 months. Those who participated in the BCN program had significantly lower median survival at 58 months compared to 84 months among those who did not participate ($p<0.01$). When disease-free survival was stratified by race and BCN participation, divergent survival patterns were observed such that median survival was significantly increased among black versus white BCN participants (60 months vs. 58 months, respectively, $p<0.01$). Among those who did not participate in BCN, black breast cancer survivors had decreased survival compared to white survivors (80 vs. 85 months, respectively, $p<0.01$).

Conclusions: While disease-free survival rates among BCN participants are significantly lower than the general population, the programmatic support provided by BCN may help reduce existing racial disparities evidenced in the general population. Further research is warranted to explore underlying mechanisms (e.g. time to treatment, distance traveled for treatment, etc.) that may contribute to this reduction. Implementing the enhanced navigation support offered by BCN to the general population is a potentially promising strategy to reduce racial cancer disparities.

64

Regional Differences in Precision Medicine Awareness in a Large US-Mexico Border County

Nguyen LH, Keleman O, Mentado A, McDaniels-Davidson, C

Purpose: Breakthroughs in genome-wide sequencing, AI, data analytics, and immuno-oncology research have advanced precision medicine, yet disparities in cancer outcomes persist across the United States. Familiarity and comfort with these concepts is a critical first step to adopting their use when indicated. We sought to determine whether familiarity with precision medicine terminology varied by region within a large, populous (3.3M residents), and culturally and socioeconomically diverse US-MX border county.

Methods: A county-wide mailed population health assessment was conducted in 2019 that included 13 items to assess familiarity with precision medicine terms as well as resident ZIP code. ZIP codes were recoded into the six existing County public health regions. Precision medicine term awareness items were dichotomized into high and low familiarity; chi-square tests were used to assess regional differences in individual term awareness (a Bonferroni-corrected alpha of 0.0038 was used to account for multiple comparisons). Overall sum scores were computed (possible range 13-65) and assessed for regional differences using ANOVA.

Results: Terms such as "biobank", "precision medicine", "pharmacogenomics", and "social determinants of health" had low familiarity across all regions, with fewer than 25% of respondents reporting moderate to extreme familiarity with these terms. Familiarity with the terms "gene" and "genome" varied by region ($p<0.0004$). Summed awareness scores varied by region, with the lowest mean awareness observed in the south (38.7), followed by east (40.1), north central (42.5), north inland (43.5), central (43.7), and north coastal (44.9; ANOVA $p<.001$).

Conclusions: The south and east regions of San Diego County, both of which include the US-Mexico border, show lower precision medicine awareness, underscoring the need for further research into the socioeconomic drivers of this gap. Implementing geographically-based policy interventions and educational programs within existing public health infrastructures could help address these challenges in ethnically diverse and remote communities.

65

Risk-Related Experiences Among Transgender and Gender Expansive People with Elevated Breast/Chest Cancer Risk: A Systematic Review

Masterson KM, Victory EQ, Slater J, Paskett ED, Padamsee TJ

Purpose: This review builds on the knowledge of the unique barriers that transgender and gender expansive (TGE) people experience to health management that manifest in significantly lower breast/chest cancer (BC) screening utilization rates as compared to non-TGE people. The purpose is to identify gaps that exist in the scientific literature on the risk-related experiences, including screening and preventive decision-making processes and, coping thoughts and behaviors among TGE people who are at elevated risk for BC.

Methods: We conducted a systematic review of the literature by searching for articles that reviewed or reported original research, discussed TGE people with elevated (hereditary) BC risk who had not been diagnosed with BC at the time of the study, and discussed the outcomes of risk perceptions, risk management, screening, preventive decision-making, coping thoughts and behaviors, or other experiences regarding that elevated BC risk. We searched 7 databases for research articles published in English through December 2022. Then, we conducted a meta-synthesis to compose an integrated account of the themes elucidated across the set of included articles.

Results: Our searches yielded 2473 unique articles, all of which were screened for this review. In total, 10 articles were eligible for inclusion. These studies had methodological weaknesses. Nearly all the studies presented participants as clinical anomalies to be managed rather than individuals with agency. Notably, though, two articles prioritized the discussion of patients' perspectives through direct quotes. These articles focused on patient autonomy, emphasizing the importance of shared decision making, given the lack of evidence-based guidelines for screening and risk management among this population.

Conclusions: Foundational sample-based research is needed to explore the risk-related experiences of TGE people with elevated BC risk. This research should overtly attend to gender identity and its relation to prevention-related experiences. Focusing on the patient perspective in future research would help situate TGE people as active participants in their health management by facilitating a better understanding of their needs and experiences as patients.

66

Rural Cancer Disparities from Oklahoma Cancer and Vital Records Registries 2017-2021

Campbell JE, Sambo AB, Unsuccessful L, Pharrell S, Drescher MP

Purpose: This study examines cancer incidence, staging, and mortality in Oklahoma's rural and urban populations.

Methods: Cancer incidence data (2017–2021) were obtained from the Oklahoma Central Cancer Registry (OCCR) and mortality data from Oklahoma Vital Statistics (OVS), both accessible via OK2SHARE for de-identified information. Rates were suppressed for low counts to ensure confidentiality. Rurality was assessed using the 2023 USDA Rural-Urban Continuum Codes, categorizing Oklahoma's 77 counties into urban (RUCC 1-3, n=18), large rural (RUCC 4-6, n=17), and small rural (RUCC 7-9, n=42). Age-adjusted rates and trends were analyzed for statistical significance using Joinpoint regression.

Results: From 2017 to 2021, Oklahoma diagnosed 106,973 cancer cases: 68,208 in urban areas, 22,500 in large rural areas, and 16,198 in small rural areas, with age-adjusted all- cause incidence rates being similar in urban (456.3), large rural (476.9), and small rural (459.1) locations. Urban residents were more likely to have private insurance coverage, while rural populations relied on Medicare, with higher Indian Health Services usage in large rural area. During this period, there were 41,654 cancer deaths: 25,102 in urban areas, 9,487 in large rural areas, and 7,033 in small rural areas. Age-adjusted all-cause mortality rates were highest in large rural areas (189.8 for large rural areas and Incidence rates for female breast (invasive and in situ) and prostate cancers were higher in urban areas, while colorectal and lung cancer rates were higher in rural areas. Lung and bronchus cancer was the leading cause of death across all groups, with more advanced stage disease increasing with rurality. for small rural areas). In urban and large rural areas, cancer incidence trended modesty upwards since 2015. Mortality rates decreased from 1999 to 2021, with the decline lagging in rural areas compared to urban ones.

Conclusions: In Oklahoma, urban populations have higher cancer incidence rates, while rural populations have higher mortality rates. Lower screening rates in rural areas lead to delayed diagnoses and worse outcomes for preventable cancers like breast and colorectal cancer. Medicaid expansion in 2021 reduced financial barriers to care, but access challenges persist.

67-T

Rural-Urban Differences in Cancer Screening Intention among Women Eligible for Cervical Cancer Screening

Kong WY, St. Sauver JL, Zhu X, Finney Rutten, LJ

Purpose: Cervical cancer incidence is disproportionately higher among women in rural versus urban settings. Cervical cancer screening recommendations differ across guideline-setting organizations and evolve over time. We assessed differences in intention to screen for cancer among women not up to date with cervical cancer screening and studied how perceptions of health and cancer recommendations affect cancer screening intentions among screening-eligible women in rural versus urban settings.

Method: We analyzed data from the Health Information National Trends Survey (HINTS 6), fielded March-November 2022 (N=6,252). We restricted our weighted analyses with jackknife replication to women aged 21-64 who were not up to date with cervical cancer screening (n=815). We assessed differences in intention to complete cancer screening in the next year by urban versus rural residence and perceptions of health and cancer prevention recommendations using chi-square tests. We also assessed interactions between urban/rural residence and perceptions of health and cancer prevention recommendations on intention to complete screening using multivariate logistic regression.

Results: In our analysis, women not up to date with cervical cancer screening were predominantly aged 50-64 (51.8%), non-Hispanic white (54.1%), and resided in urban settings (82.2%). Women in urban areas more frequently reported being somewhat or very likely to screen for cancer than those in rural settings (60.9% vs. 44.2%, p=0.01). Women who perceived health recommendations as conflicting less frequently reported cancer screening intention than those who did not (51.3% vs. 64.9%, p=0.03). In the multivariate model, rurality interacted with perceptions about conflicting health recommendations to impact intention to screen (β=1.68, SE=0.77, p=0.03).

Discussion: Women in urban settings who were not up to date with cervical cancer screening were more likely to intend to screen for cancer compared to those in rural settings. The interaction between rurality and perceived conflicting health recommendations emerged as a significant factor influencing cancer screening intentions, highlighting the importance of addressing perception challenges to improve screening uptake by rurality.

68

Self-Reported Family History of Cancer Differs by Race but Not Age at Diagnosis Among Colorectal Cancer Cases in the Disparities and Cancer Epidemiology (DANCE) Study

Purrington KS, Rozek LS, Patil S, Ruterbusch JJ, Wenzlaff AS, Pandolfi SS, Martin C, Beebe-Dimmer JL, Schwartz AG, Hsieh MC, Stoffel EM

Purpose: To evaluate cancer family history (FH) by race and age at diagnosis among a population-based cohort of invasive colorectal cancer (CRC) cases.

Methods: We analyzed data from 859 Black/African American (B/AA) and Non-Hispanic White (NHW) CRC cases enrolled in the Disparities and Cancer Epidemiology (DANCE) study, including cases from the Detroit Research on Cancer Survivors cohort and cases recruited via the Metropolitan Detroit Cancer Surveillance System and the Louisiana Tumor Registry. Self-reported FH of breast, bladder, cervix, colon/rectum, esophagus, head & neck, kidney, leukemia, liver, lung, lymphoma, melanoma, myeloma, ovary, pancreas, prostate, stomach, thyroid, and uterus cancers among first degree relatives and grandparents were evaluated. FH-based guidelines for Lynch syndrome genetic testing include having 1+ relatives diagnosed under the age of 50 or 2+ relatives diagnosed at any age with colorectal, uterus, kidney, pancreas, ovary, stomach, bladder, or brain cancer. We used logistic regression to evaluate associations between race, age at diagnosis, and cancer FH.

Results: A total of 859 CRC participants completed the FH section of the survey. 154 (17.9%) were diagnosed with CRC age <50 years and 549 (63.9%) were B/AA. 572 (66.1%) cases reported cancer FH diagnosed in 1+ relatives. Only 52 (6.1%) reported FH meeting guidelines for genetic testing for Lynch syndrome. B/AA cases were less likely than NHW cases to report FH of any cancer (OR=0.55, 95% CI 0.40-0.75) or FH of colorectal (OR=0.58, 95% CI 0.41-0.82), head & neck (OR=0.43, 95% CI 0.,20-0.89), liver (OR=0.27, 95% CI 0.09-0.81), lymphoma (OR=0.08, 95% CI 0.02-0.36), melanoma (OR=0.08, 95% CI 0.02-0.34), and bladder cancers (OR=0.29, 95% CI 0.10-0.87) adjusting for survey method and version. Strikingly, age at diagnosis, considered as a categorical (<50 vs. 50+) or continuous variable, was not associated with FH of any cancer site or meeting criteria for Lynch syndrome genetic counseling based on FH.

Conclusions: Earlier onset CRC cases do not demonstrate higher familial clustering than later onset cases in this population. There may be true racial differences in cancer prevalence among relatives of CRC cases as well as differences in knowledge of cancer within families.

69-T

Self-Reported Short Sleep Duration and Overall and Aggressive Prostate Cancer among Black and White Men in the Southern Community Cohort Study (SCCS)

Anukam DC, Nianogo RA, Arah OA, Boutros PC, Rao J, Fowke JH, Steinwandel M, Zhang ZF

Purpose: Insufficient sleep may be associated with metabolic and behavioral outcomes, but the association between insufficient sleep and prostate cancer incidence and aggressiveness is not well understood. Our goal was to investigate (1) the association of sleep duration and restless sleep with prostate cancer incidence and aggressiveness, and (2) determine if there is a race difference in any sleep-prostate cancer association.

Methods: SCCS recruited study participants from 12 Southeastern states from March 2002 through September 2009. SCCS participants included nearly 35,000 males and were predominately African American (AA, 67%). Sleep exposures were measured by questionnaire at baseline and included weekday and weekend sleep duration, weighted average sleep duration, and restless sleep, in which sleep duration and restless sleep were self-reported at enrollment. Prostate cancer status was identified through linkage with each state tumor registry. We used Cox proportional hazards models to estimate the associations between sleep duration and restless sleep with prostate cancer incidence and aggressiveness.

Results: During follow-up (median 10.9 years), 1345 men developed prostate cancer. Sleep duration and restless sleep were not associated with prostate cancer incidence and aggressiveness overall. However, short sleep duration (<6 hours), in comparison to optimal duration (7-8 hours), on weekdays was associated with a decreased risk of prostate cancer overall (adjusted hazard ratio (HR) = 0.81 (95% CI confidence interval: 0.66-0.99); p-value=0.043) and among AA men. Short sleep duration for weekdays (HR=0.76 (0.60-0.95); p-value=0.018), weekends (HR = 0.74 (0.57-0.95); p-value=0.020), and weighted sleep average (HR=0.77 (0.60-0.99); p-value=0.039) were also associated with decreased prostate cancer risk among AA men. No statistically significant results were observed for aggressive prostate cancer or among white men.

Conclusion: Contrary to expectation, short sleep duration was associated with decreased prostate cancer incidence among AA men only in SCCS. Further research is needed to determine the reason and any impact on race differences in prostate cancer.

70

Sexual Orientation Differences in Cervical Cancer Screening, HPV Testing, and HPV Vaccination Rates: Cumulative Findings from Nine Years of CDC BRFSS

Cook JJ, Jimenez AM, Stillman JS, Olatosi BA, Adams SA

Purpose: To compare HPV testing, HPV vaccination, and cervical cancer screening rates among heterosexual, lesbian or gay, and bisexual women in the United States, and identify disparities in preventive care across different sexual orientations.

Methods: We analyzed pooled data for 3,958,267 respondents from the CDC Behavioral Risk Factor Surveillance System (BRFSS) spanning nine years (2014-2022), focusing on female sexual orientation. Key outcome measures included self-reported HPV testing, HPV vaccination, cervical cancer screening via Pap test, and overall cervical cancer screening. Outcomes were binary ("Yes" or "No"). We used Rao-Scott Chi-Square tests that accounted for the BRFSS complex survey design to examine associations between measures, designating statistical significance as ($p < 0.05$).

Results: We found significant differences across sexual orientation categories for all outcomes. For HPV testing, 47.9% of heterosexual women reported undergoing the test, compared to 39.2% of lesbian or gay women and 58.8% of bisexual women ($p < 0.01$). For HPV vaccination, 23.2% of heterosexual women reported receiving the vaccine, compared to 17.9% of lesbian or gay women and 35.2% of bisexual women ($p < 0.01$). Concerning cervical cancer screening via Pap test, 82.0% of heterosexual women reported having had a Pap test, compared to 80.3% of lesbian or gay women and 80.8% of bisexual women ($p < 0.01$). Finally, for overall cervical cancer screening, 88.7% of heterosexual women reported being screened, compared to 87.5% of lesbian or gay women and 79.0% of bisexual women ($p < 0.01$).

Conclusions: The analysis reveals significant disparities in HPV testing, vaccination, and cervical cancer screening rates based on sexual orientation. Bisexual women had the highest HPV testing and vaccination rates, but the lowest participation in cervical cancer screening. Heterosexual women had the highest screening rates, while lesbian or gay women had lower HPV testing and vaccination rates compared to both heterosexual and bisexual women. These findings reinforce the need for tailored public health interventions to address barriers to preventive care and to reduce health disparities among sexual minority women.

71-T

Sexual Orientation Discrimination Connects to Reactions to Proposed Nicotine Reduction Regulations among Individuals Identifying with a Minoritized Sexual Orientation

Patev AJ, Vargas T, Ogunleye E, Sawyer-Mays AN, Cobb CO

Purpose: Individuals identifying with a minoritized sexual orientation (IIMSO) report rates of cigarette use 1.5-2 times higher than heterosexual individuals, often due to sexual orientation discrimination related stress. More cigarette use places IIMSO at increased risk of lung cancer; compounded by disparities in lung cancer screening and treatment, IIMSO individuals are disproportionately burdened by lung cancer and are more likely to experience severe morbidity and mortality. In 2018, the U.S. FDA proposed limiting nicotine levels in cigarettes. IIMSO reactions to a nicotine reduction regulation are important to capture, considering this group would be impacted substantially. The present study connected experiences of sexual orientation discrimination to IIMSO individuals' reactions to a proposed cigarette nicotine reduction regulation.

Methods: In 2023, 399 IISMO completed an online survey via Qualtrics, reporting experiences of sexual orientation discrimination and reactions to a proposed cigarette nicotine reduction regulation. Exploratory factor analysis identified five reaction domains: Positive Public Health Effects, Psychological Reactions, Reacting by Quitting or Reducing, Reacting with Increased Use, and Perceived Negative Health Effects. Hierarchical regressions were conducted to explore relationships between discrimination and reactions to a cigarette nicotine reduction regulation.

Results: We found two of five factors significantly predicted reactions. Increased discrimination was related to greater agreement with Positive Public Health Effects of a proposed cigarette nicotine reduction regulation, $\beta=.14$, $p=.02$. Moreover, sexual orientation discrimination was significantly related to strong agreement with Psychological Reactions, $\beta=.16$, $p<.001$; experiencing more discrimination was linked to stronger agreement with negative psychological reactions to cigarette nicotine reduction.

Conclusions: Findings highlight the need for targeted supports for IIMSO individuals if a cigarette nicotine reduction regulation is implemented, alongside efforts to combat systemic discrimination to decrease tobacco use. Addressing issues that lead to increased smoking and inequity will help to reduce lung cancer disparities and promote equitable outcomes for IIMSO.

72

Social and Psychological Well-being of Men and Women Living with HIV and Cancer in 2020: Findings from the MACS/WIHS Combined Cohort Study (MWCCS)

Islam JY, Rodriguez OG, Landon C, Sun J, Wolinksy S, Hussain S, Ho K, Risley C, Fischl MA, Collins LF, Floris-Moore M, Cohen M, Wang CC, Spence A, Gustafson D, Adedimeji A, Camacho-Rivera M, Friedman MR, D'Souza G

Purpose: People living with HIV (PWH) with cancer are more likely to experience mental health symptoms compared to those without HIV. The pandemic led to significant adverse impacts on psychosocial symptoms among adults with cancer and HIV independently. Our objective was to assess the effects of social disruptions on mental health outcomes among PWH and cancer during the pandemic.

Methods: A cross-sectional survey was administered to participants of the MACS/WIHS Combined Cohort Study between 04-09/2020 to assess impacts of the pandemic. Our main exposure was social disruption due to COVID-19, and outcomes included depression, loneliness, anxiety, social support, social support satisfaction, and resiliency. We included those with any cancer diagnosis, based on either self-report or registry confirmation. We used multivariable logistic regression to estimate adjusted odds ratios (aOR) with 95% confidence intervals to assess associations between social disruptions during the pandemic with our outcomes of interest among PWH and cancer, adjusting for age, race/ethnicity, household income, region and sex.

Results: Overall, our sample of 621 adults with cancer included men (n=381; 61%) and women (n= 249; 39%), of whom 60% were living with HIV. PWH with cancer included 58% aged ≥60 years, 44% non-Hispanic Black or Hispanic/Latinx adults, 39% heterosexual, 37% who were in a relationship, 30% highest level of education was high school or less and 30% had an average household income of less than $18,000 per year. The most common cancer types among PWH included skin cancer (26%), Kaposi sarcoma (9%), prostate cancer (9%), breast cancer (8%), cervical cancer (7%), and anal cancer (7%). Compared to those without HIV, men living with HIV (LWH) were more likely to report social disruptions (9% vs.6%; p=0.041), but women LWH were less likely (9% vs.26%; p<0.001). PWH with cancer with ≥2 social disruptions were more likely to report significant symptoms of loneliness (aOR:2.61; 95% CI=1.07-6.33); depression (aOR: 3.12; 95% CI=1.30-7.49); anxiety (aOR: 2.60; 95% CI=1.01-6.81); and stress (aOR: 5.47; 95% CI=1.56-19.21) compared to those with no social disruptions.

Conclusion: PWH and cancer were vulnerable to social disruption during the pandemic, impacting mental health.

73-T

Socio-Ecological Influences on Early-Stage Non-Small-Cell Lung Cancer Treatment Disparities

Ferrin JA, Scampavia LP, Arizpe A, Miguel L, Farias A

Purpose: There are racial/ethnic disparities in receipt of guideline-concordant cancer treatment. Thus, we aimed to explore patient-reported socio-ecological influences that may drive early-stage non-small-cell lung cancer (NSCLC) treatment disparities.

Methods: We conducted semi-structured interviews asking patients about treatment experiences. A total of 28 patients were recruited from the LA SEER Registry. Eligible patients were: (1) newly diagnosed with early-stage NSCLC within 6-12 months of ascertainment and (2) not actively undergoing treatment. Patients were recruited from mailings and phone call follow-up. Interviews (about 60 min.) were recorded, transcribed using a speech-to-text service, and edited for accuracy. Grounded in the socio-ecological framework, responses were content-coded using a constant comparison method. Two co-authors independently coded transcripts and met to refine the codebook. The data was subsequently organized and analyzed into major themes using Dedoose.

Results: The average age of the cohort was 70 years old. Demographics of patients were 46% Non-Hispanic White, 29% Hispanic, 18% Non-Hispanic Black, and 7% Non-Hispanic Asian. 64% were female and 34% were male. 25 interviews were conducted in English and 3 in Spanish. We found three main spheres of socio-ecological influence that drive differences in patient treatment: personal, interpersonal, and organizational factors. At the individual-level, treatment is based on alignment with patients' personal preference/ health goals and their knowledge/ health literacy in understanding treatment modalities. We found interpersonal factors between patients and providers influence treatment decisions through communication and confidence/ trust in providers. The provider specialty and referral pathway impact potential treatment options presented to patients and insurance related issues may influence treatment delays.

Conclusion: Multiple levels of influence drive treatment decisions for early-stage NSCLC treatment, particularly the personal-, interpersonal- and organizational-factors. The findings illustrate a need to conduct a quantitative study to determine whether these factors are associated with patient receipt of guideline-concordant cancer treatment.

74-T

Sociodemographic Differences in the Association between Incident Cancer and Risk of Alzheimer's Disease and Related Dementias: The Multiethnic Cohort Study

Nam GE, Lim U, Park SY, Wu Y, Rojas-Saunero LP, Zhang ZF, Mayeda ER

Purpose: We investigated heterogeneity in sociodemographic status in the relationship between cancer and Alzheimer's disease and related dementias (ADRD), considering the competing risk of death.

Methods: Using the Multiethnic Cohort study (1993-2019) linked with SEER tumor registries for cancer diagnosis, Medicare for ADRD diagnosis, and state/national death records, we estimated effects of incident cancer on cumulative incidence of ADRD among Black, Latino, Japanese American, Latino, and Native Hawaiians (baseline age 45-75 years). We used risk ratios (RRs) to estimate the total and controlled direct effects of incident cancer on ADRD, stratified by sex, race/ethnicity, education level, and baseline age. We used inverse probability weighting to control for confounding by sociodemographic and health characteristics. We estimated the total effect of cancer on ADRD risk, including the path mediated by death, using a weighted Aalen-Johansen estimator. We estimated the controlled direct effect of cancer on ADRD risk (intuitively, the effect of cancer on ADRD risk not mediated by death) using a weighted Kaplan-Meier estimator.

Results: Among 104,258 participants (55% women, 74% non-White), 24,083 were diagnosed with incident cancer and 23,147 were diagnosed with ADRD during follow-up. The RR for the total effect of cancer on ADRD, including the path mediated by death, was 0.77 (95% CI, 0.75-0.80). The RR for the estimated direct effect of cancer on ADRD not mediated by death was 1.36 (95% CI, 1.32-1.38). In stratified analyses, the inverse cancer-ADRD association in total effect analyses was more pronounced in women, Black participants, participants with lower education levels, and those aged >=65 at baseline. In contrast, the positive cancer-ADRD association in controlled direct effect analyses was stronger among men, Native Hawaiian participants, participants with higher education levels, and those aged <65 at baseline.

Conclusions: The association between cancer and ADRD risk differs depending on how death is considered in analyses. Stratified results underscore the need to investigate potential disparities within the cancer-ADRD association.

75

Sociodemographics in Relation to Satisfaction With Cancer Care, Social Support, Self-Efficacy, Barriers, and Change Strategies Among Individuals With Prostate Cancer

Graff RE, Chan JM, Wang L, Van Blarigan EL, Sanchez A, Roberts S, Macaire G, Zhang L, Winters-Stone KM, Cooperberg MR, Carroll PR, Kenfield SA

Purpose: To inform improved patient navigation and design of interventions, we evaluated how sociodemographics relate to care satisfaction and facilitators of and barriers to healthy lifestyle after cancer diagnosis.

Methods: We conducted cross-sectional analyses of pre-treatment data from Prostate 8-II, a trial of exercise and/or dietary interventions vs. usual care in 204 men newly diagnosed with prostate cancer who chose treatment with radical prostatectomy. Cancer care satisfaction was measured using the validated Service Satisfaction Scale for Cancer Care (four domains). Secondary outcomes included four constructs of Social Cognitive Theory, a theoretical model to understand behavior change: social support, self-efficacy (confidence in one's ability to engage in relevant behaviors), perceived barriers, and use of change strategies. We used t-tests (age) and Chi-square tests (marriage status, education, and employment) to examine associations of baseline sociodemographics with satisfaction with care and health behavior change constructs.

Results: 172 participants responded to cancer care satisfaction questions. Younger (p=0.03) and unmarried (p=0.01) individuals reported reduced satisfaction with "information provided about care." Sociodemographics were not otherwise statistically significantly associated with satisfaction with care domains. 190 individuals completed surveys on social support, self-efficacy, perceived barriers, and use of change strategies for exercise and dietary behaviors. Regarding exercise, married men reported higher self-efficacy scores (p=0.03) and fewer barriers (p=0.05), and those with a college degree were more likely to apply change strategies (p=0.04). Regarding diet, married men received more encouraging social support (p<0.01), perceived fewer barriers (p<0.01), and applied change strategies more frequently (p=0.02), while men working full-time were more likely to experience sabotaging social support (p<0.01).

Conclusions: Sociodemographic characteristics may factor into patient experiences with prostate cancer and health behaviors during survivorship. Younger, unmarried, and less educated men may especially benefit from research geared toward developing tailored communication/education and behavioral intervention strategies.

76-T

Telehealth Use and Time to First Lung Cancer Treatment

Smith RE, Onega T, Moen EL, Brooks GA, Wang Q, Wong SL, Wang F, Tosteson ANA

Purpose: Telehealth (TH) has potential to increase access to cancer care, yet an increase in digital care could exacerbate inequitable access. We characterized the extent of TH use and association of TH with time to first lung cancer treatment.

Methods: Medicare fee-for-service beneficiaries with incident lung cancer diagnosed May-October 2020, without a cancer diagnosis in the prior 12 months, who received treatment before January 2021. Among beneficiaries treated with surgery, chemotherapy, or radiation, we used multi-level survival models to assess time from cancer diagnosis to first treatment. Receipt of at-least one TH visit between diagnosis and first treatment was the primary exposure. We adjusted for age, sex, race, dual Medicaid/Medicare eligibility, metastatic cancer, treatment type, rurality, area deprivation index, and hospital referral region (HRR) weekly COVID-19 rate, and accounted for HRR random effects.

Results: We identified 22,057 beneficiaries who received lung cancer treatment. Most lived in urban areas (78%) and were White race (88%). Half were female. TH between diagnosis and first treatment was observed for 30%. Urban-residing beneficiaries had the greatest percentage of TH use before first treatment (31%; 5,407/17,178), and both suburban residents (25% ;628/2,550) and small town rural (24%;240/1,006) used a slightly higher percent than large town residents (21%; 276/1,323). Forty-percent (167/416) of beneficiaries of Asian race used TH whereas 28% (341/1,222) of Black and 29% (5,686/19,364) of White race used TH. Median time to treatment was longer among those who used TH (28 days; IQR:13-48) vs. those who did not (14 days; IQR:1-31). TH use before first treatment was associated with a decreased chance of earlier treatment (0.66=HR; 95% CI: 0.64-0.69). Rurality and Chronic conditions were not significantly associated with time to first treatment.

Conclusions: TH prior to first cancer treatment was fairly common and varied by geography. TH use was associated with longer time to first lung cancer treatment after adjustment for patient and geographic factors, and COVID-19 rates. Investigation into the consistency of these findings across cancer types, time periods, and regulatory settings, with attention to broadband access, is ongoing.

77-T

The Impact of Community Connectedness on Tobacco Refusal Skills Among Youth in India from Low Socio-Economic Backgrounds

Piombo SE, Dhawan D, Bawdekar M, Gaur K, Viswanath K

Purpose: In India it is estimated that 27% of the population ages 15 and older are current tobacco users and that one million people a year die of tobacco-related diseases. Developing strong tobacco-refusal skills during youth and adolescence is essential for preventing tobacco use and related negative health outcomes. While lower socio-economic status is associated with increased risk of tobacco use, several social and individual factors may influence or strengthen tobacco-refusal skills. The objective of this study is to understand the associations between community connectedness, self-esteem, and resilience on tobacco-refusal skills among youth in India from low socio-economic backgrounds. We hypothesize that greater community connectedness, self-esteem, and resilience are associated with stronger tobacco-refusal skills.

Methods: This study uses the data from a cohort study of 3,056 7th grade students from government aided schools in Mumbai conducted in partnership with Salaam Bombay Foundation, an organization that works with under resourced youth. We collected data on demographics, health, well-being, media exposure and risk behaviors. A structural equation model was estimated to test the direct effects of community connectedness (i.e. feeling close to and looking up to community members), positive social media experiences, self-esteem, and resilience on tobacco refusal skills, while controlling for mediation by self-esteem and resilience.

Results: Stronger feelings of community connectedness and positive social media experiences were associated with both higher self-esteem and greater resilience. Community connectedness had a strong positive effect on tobacco refusal skills ($p < 0.001$) while controlling for positive social media experiences, self-esteem and resilience. Self-esteem had a borderline significant effect on tobacco refusal skills ($p = 0.055$).

Conclusions: These findings indicate that fostering community connectedness is critical for improving tobacco refusal skills and boosting self-esteem and resilience among youth from low socio-economic backgrounds. Gaining insight on the relationships between these factors provides opportunities to cultivate tobacco-refusal skills among youth.

78

The Impact of Language Barriers on Financial Toxicity for Spanish-Speaking Patients Undergoing Cancer Treatment

Banegas MP, Felix Campos A

Background: Financial toxicity represents the economic barriers and burdens experienced by patients and their families due to medical costs. For example, the treatment options for cancer may include radiation, chemotherapy, and surgery. Even with insurance, patients must pay elevated amounts out of their pockets. In 2018, patients undergoing cancer treatments in the US paid together $5.6 million out of their pockets.

Method: Nine UCSD Health medical providers were interviewed about their experiences working with Spanish-speaking patients undergoing cancer treatment. The medical providers included medical oncologists, radiation oncologists, surgeons, pharmacists, nurses, social workers, patient navigators, and interpreters. The questions were related to their understanding of how financial information is provided to patients, financial resources available for patients, the impact of language barriers on financial toxicity, and how patients' financial struggles affect their health and treatment.

Results: Based on medical providers experiences, Spanish-speaking patients have a harder time communicating their financial needs as they face language barriers on top of the fact that this is a difficult conversation for anyone to have. It is not until patients are unable to continue treatment that a financial struggle is identified. However, methods have been identified to help patients undergoing cancer treatment. Many of the interviewees identified early patient financial screening as a way to have early involvement of social workers and the patient's financial counselor in the care for the patient. Similarly, specifically for Spanish-speaking patients, having in-person interpreters can facilitate communication between staff and patients, and provide a more comfortable environment for financial topics to be discussed in comparison to online/phone interpreter services.

Conclusion: Spanish-speaking patients are affected more drastically, as they have a harder time communicating their financial needs due to language barriers. Early screening for patients can facilitate the involvement of the team to address their financial and language needs. The next step for this research project involves interviewing UCSD Spanish-speaking patients undergoing treatment.

79

The Impact of Social Determinants of Health on Quality of Life in Korean Americans with Chronic Hepatitis B

Nam Y, Klassen AC, Juon HS

Purpose: It is well established that hepatitis B virus (HBV) infection disproportionately affects Asian Americans, and they are 11 times as likely as whites to develop hepatocellular carcinoma. HBV and subsequent liver disease in Asian Americans are further complicated by quality of life surrounding the infection. There are few studies exploring the social determinants of health on quality of life in this population. The purpose of this study is to characterize the most significant social determinants of health (SODH) associated with quality of life among Korean Americans with Chronic Hepatitis B (CHB).

Methods: A total of 365 CHB patients completed the enrollment survey. SF-12 was used to measure quality of life calculating physical and mental components summary scores (PCS-12 and MCS-12). Social determinants of health were measured by 5 domains including education access, economic stability, social/community context, neighborhood, and health care access. Participant's age and gender were included as control variables. Descriptive statistics and multivariable linear regression were used.

Results: The average age of participants was 60.09 years, with 44% female. In multiple linear regression analyses, employment and financial instability were associated with quality of life: Employed had higher scores of quality of life (β=2.27, p=.009 for MCS-12; β=1.78, p=.02 for PCS-12). Those with financial instability reported lower scores of quality of life (β=-1.82 p<.001 for MCS-12; β=-1.05, p=.04 for PCS-12). Social support and perceived neighborhood social cohesion were positively associated with mental health, while marital status was positively associated with physical health. In addition, females had lower levels of physical health than males (β=-2.54, p<.001). Interestingly, older adults had worse physical but better mental health (β=-.13 p=.002 for PCS-12; β=.16, p<.001 for MCS-12).

Conclusions: While some domains of SDOH (e.g., economic stability, social context, neighborhood characteristics) have an impact on the quality of life, other domains did not predict the quality of life for this population. Further research is warranted to explore the nuanced dynamics of different domains of SDOH and quality of life in this population.

80-T

Tracking Breast Cancer Disparity Trends in South Carolina

Jessica Gonzalez, RN, MSN, MSHAPI, DNP
Swann Arp Adams, MS, PhD, FACE Robin M. Dawson PhD, APRN, CPNP-PC, FAAN Tisha Felder, PhD, MSW.

Purpose: To examine South Carolina Community Assessment Network (SCAN) databases and the Behavioral Risk Factor Surveillance System (BRFSS) databases to understand and interpret trends to identify disparities among sub-populations who would benefit from targeted interventions.

Methods: Assessment and Analysis of the most recent data available in SCAN 2015-2019 and BRFSS databases from 2015-2020. Data was input into an excel file and descriptive statistics were calculated. Chi-square probabilities were calculated using socscistatistics (Social science statistics online calculator).

Results: Black women in SC were 6% less likely to have early-stage breast cancer than white women and were 6% more likely to have late breast cancer subtypes compared to their white counter parts (p-value <0.01). Furthermore, Black women were 3% more likely to have an invasive breast cancer subtype compared to white women (p-value <0.01). While black women are less likely to develop breast cancer, they have a higher mortality rate than white women. When broken down by age at diagnosis, incidence rates are higher among 45-64-year-old black women compared to white women of the same age and overall mortality rates are higher among black women (15.8) compared to white women (14.075). During those years mammography screening rates of black women has been higher than white women in SC.

Conclusion: Black women are less likely to develop breast cancer than white women. Despite improved screening for Black women, they are more likely to die from breast cancer. Black women make up a large percentage of the population and in addition to the percentage of South Carolina living in rural areas, which demonstrates a heightened need to identify and promote effective preventative measures specific to this population. Future research should aim to understand the underlying mechanisms for the association between stage of diagnosis and breast cancer mortality. Racial disparities in stage of diagnosis, incidence, mortality continue to evolve and change over time and demonstrate opportunities for identifying interventions to bridge the mortality gap among minorities.

81

Trends in Ovarian Cancer Incidence Among Premenopausal and Postmenopausal Women in the United States, 2001-2021

Adekanmbi V, Berenson A.B, Shakir B, Hsu C.D, Hoang T.N, Sokale I, Guo F

Introduction: The main aim of this study was to characterize trends in the incidence of ovarian cancer between premenopausal, perimenopausal and postmenopausal women to inform future targeted healthcare interventions and prevention programs.

Methods: This population-based cross-sectional study analyzed data from the United States Cancer Statistics (USCS) database for 2001–2021, which covered the entire US population. Joinpoint regression was used to compute the average annual percentage change (APC) with their 95% confidence interval (CI) and age-standardized incidence rates (ASIR) per 1,000,000 population.

Results: The results showed that the IR of ovarian cancer slightly declined between 2001 and 2021 (APC = −0.7; 95 %CI = −1.0 to -0.5) for individuals aged 20-49 years. Individuals aged 50-64 and 65+ years old respectively had greater decreases in IR of ovarian cancer when compared to individuals aged 20-49 years. When stratified by race/ethnicity, non-Hispanic American Indian/Alaska Native (NHAIAN) individuals aged 20-49 years experienced the greatest increase in IR of ovarian cancer (APC = 2.4; 95 %CI = 0.9 to 4.1). Joinpoint analyses identified one inflection point in localized ovarian cancer incidence trends among all three age groups: an initial decline from 2001 to 2011 among women 20-49 years old and 65+ years old, and from 2001 to 2012 among women 50-64 years old, followed by an upward trend thereafter to 2021. Similarly, there was one inflection point in the IR of ovarian cancer for the clear cell and endometrioid types among women aged 20-49 years old.

Conclusions: The study revealed that the IR of ovarian cancer in the US declined significantly among postmenopausal and perimenopausal women, compared to premenopausal women, for whom IR of ovarian cancer decreased only slightly. These findings underscore the need for continued efforts to improve early detection and prevention strategies to mitigate the burden of ovarian cancer especially among premenopausal women.

82

Trends in Prostate Cancer Disparities among Diverse Populations in Philadelphia

Adefarati O, Keith SW, Kantor J, Yearwood R, Klassen A, Henry K, Wiese D, Zeigler-Johnson C

Purpose: Prostate cancer (PCa) is a leading cause of cancer morbidity and mortality in the US. There are profound differences in PCa outcomes by race/ethnicity and socio-economic status. Over the last 15 years, PCa screening recommendations have changed, influencing recent trends. In Pennsylvania, the southeast region (Philadelphia metropolitan area) contains the most diversity in the state. We conducted a descriptive study focused on this unique region to examine demographic differences in PCa incidence and mortality.

Methods: Prostate cancer incidence, late-stage diagnosis, and mortality rates (per 100,000) from 2007-2022 were obtained from the Pennsylvania Data Dissemination Informatics Exchange (EDDIE) for Philadelphia County. We compared percent change over time for all patients of each major racial/ethnic group: Asian/Pacific Islander (API), Black, Hispanic, and White. We calculated percent change in age-adjusted prostate cancer rates over time by subtracting an average of the 2 most recent years of rates from an average of the first 2 years of rates in the time period, dividing the difference by the latter, and multiplying by 100.

Results: A total of 14,475 incident PCa cases were diagnosed in Philadelphia during this time period, API (1.8%), Black (48%), Hispanic (5%), White (35.6%) and Other (9.6%). Findings showed consistently higher PCa incidence for Black men compared to Non-Black populations, while rates were lowest for API. Incidence trends showed varying declines in overall incidence (-38%) and by race/ethnicity (-8% API, -32% White, -39% Black, and -44% Hispanic). Decreases in mortality were noticeable in all men (-26%), as well as White (-34%) and Black men (-29%). Interestingly, increases in late-stage diagnoses were observed over time for only White men (36%), while Black men showed a minor decrease (-1%).

Conclusions: Disparities in PCa incidence and mortality persist, particularly for Black men in Philadelphia. However, recent trends also suggest that White men are at increasing risk for late-stage diagnosis, which also requires further attention. Analyzing the influence of prostate cancer screening guidance on incidence and mortality trends by race can help better understand what further interventions are needed within local communities

83

Ultra-Processed Foods Consumption and Mortality Following Breast Cancer in Black/African American Women

Wang T, Qin B, Perlstein M, Zeinomar N, Pawlish K, Ambrosone CB, Demissie K, Hong CC, Bandera EV

Purpose: Epidemiological evidence on the influence of ultra-processed foods (UPFs) on breast cancer prognosis is scarce. No study has examined the UPF-mortality association among Black/African American (AA) breast cancer survivors.

Methods: We examined the relationship of UPFs with mortality outcomes among participants of the Women's Circle of Health Study and Women's Circle of Health Follow-Up Study. The present study included Black/AA women diagnosed with breast cancer in New Jersey between 2005 and 2019 (n=1,733). Foods and drinks consumed over 12 months before breast cancer diagnosis were assessed during home interviews by validated food-frequency questionnaires. UPFs were classified according to their degree of processing using the NOVA classification system. Death outcomes were ascertained through linkage with New Jersey State Cancer Registry files. Multivariable-adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) for UPF consumption and subsequent mortality risk were estimated using Cox proportional hazards regression models.

Results: After a median of 8.9 years of follow-up since diagnosis, 364 total deaths (198 breast cancer-related) were identified. Nine subgroups of foods, including breakfast food, processed meats, sweets, sugar-sweetened beverages, dairy products, mixed dishes, fried foods, dressings/sauces, and snacks, were classified as UPFs. Higher UPFs consumption was associated with younger age at diagnosis, lower individual and neighborhood socioeconomic status, and unhealthy lifestyle profiles. In the multivariable-adjusted model, compared to those in the lowest tertile (median=2.6 servings/day), women in the highest tertile (median=8.1 servings/day) of UPF intake had significantly higher breast cancer-specific mortality (HR=1.48, 95% CI =1.05-2.09, p-trend<0.01) and all-cause mortality (HR=1.42, 95% CI=1.10-1.84, p-trend<0.01).

Conclusion: This study represents the first and largest investigation of UPFs and breast cancer prognosis among Black/AA breast cancer survivors to date. Our findings suggest that higher consumption of UPFs may negatively influence breast cancer prognosis among Black/AA women, an underserved and vulnerable population, who is facing the highest risk of breast cancer mortality in the U.S.

Cancer-Related Policy

84

Cost-Consequence Analysis of Indoor Tanning Regulation in the United States

Meenan R, Mitarotondo A, Schroth K, Stapleton J, Berteletti J, Buller D, Heckman C

Purpose: Because ultraviolet radiation emitted by indoor tanning (IT) devices is carcinogenic, most states regulate minor access to IT. This analysis compares economic implications of state IT legislative stringency: full ban of minors under age 18 (FB) (22 states and DC), partial minor ban at ages younger than 18 (PB) (10 states), parental permission/accompaniment requirements (PP) (12 states), and no age restriction laws (NL) (6 states).

Methods: Cost-consequence analysis of IT-related regulatory stringency incorporating costs of IT-related sunburn and melanoma prevention/treatment, work productivity costs from IT-related melanoma treatment, tanning industry growth, and 10% tanning tax receipts. Data sources: published literature, IBISWorld.com tanning industry data, and an online survey of 18- to 29-year-olds who had indoor tanned in the last three years. Results are reported in annual (2022) population-weighted average (per-state) format.

Results: IT-related melanoma costs were FB ($566K), PB ($273K), PP ($476K), NL ($209K). IT-related sunburn costs were FB ($544K), PB ($435K), PP ($389K), NL ($203K). IT-related work productivity losses were FB ($546K), PB ($234K), PP ($324K), NL ($160K). Federal 10% tax receipts on IT were FB ($2.69M) PB ($1.88M), PP ($2.20M), NL ($1.02M). Projected 5-year growth rate (to 2022) in IT businesses was FB (-1.0%), PB (-2.0%), PP (-3.7%), NL (-2.0%) due to consolidation. Projected 5-year growth rate in IT employee base (to 2022) was FB (3.7%), PB (4.8%), PP (4.7%), NL (4.7%).

Conclusions: These disaggregated results suggest that state-level IT regulatory stringency has implications for expenditures in various societal sectors. Though in many cases, the association between regulatory stringency and state-level expenditures is not in the expected direction (e.g., state-level IT-related health care costs for melanoma and sunburn are higher in FB states than in NL states), this association is likely affected by many factors, such as geography, demography, and political culture, which will be included in pending analyses. Since most state-level restrictions are relatively recent (since 2012), future studies should address long-term implications of IT regulation, including on non-melanoma skin cancers.

85-T

Early Examination of Hospital-Level Performance on Unplanned, Potentially Avoidable Hospital Visits After Chemotherapy, 2018 - 2022

Pilla P, Hong AS, He L, Courtney MD, Fleming J, Sadeghi N, Halm EA

Purpose: To assess the utility of the Medicare quality measure of avoidable hospital visits after chemotherapy.

Methods: Our analytic sample consists of a longitudinal cohort of hospitals that reported performance in the Medicare Outpatient Quality Reporting Program. We conducted a retrospective analysis of avoidable hospital visit rates for available years, 2018 - 2022. We performed descriptive and trend analysis for emergency department (ED) and inpatient admission (ADM) rates; and for relative performance ("better than", "no different than", "worse than" the national rate). We stratified hospitals into quartiles of absolute performance in 2018, then applied multivariate generalized linear regression to model change in visit rates by 2022.

Results: We identified 1,179 hospitals: 94.3% non-profit; 22.9% major teaching hospitals. The national avoidable ED visit rate was 6.0% in 2018 and 5.4% by 2022; the ADM visit rate was 12.5% in 2018 and 10.3% by 2022. However, across both measures, 91.1 to 98.4% of hospitals performed "no different" than the national rate each year. In multivariate modeling, hospitals in the lowest quartile of 2018 ED rates had a significant 0.22% increase in ED visit rate by 2022 (95% CI: 0.06 to 0.39), while hospitals in the highest quartile of 2018 ED rates had the greatest fall by 2022 (-1.72%, 95% CI: -1.82 to -1.62). Hospitals with the lowest quartile of 2018 ADM rates were associated with a 0.88% fall in rate by 2022 (95% CI: -1.16 to -0.61), and hospitals in the highest quartile of 2018 ADM rates were associated with the greatest fall in ADM rate by 2022 (-3.04%, 95% CI: -3.20 to -2.87). We found that 10.6% of the ED rate improvement (95% CI: 9.8 to 11.5) and 9.0% of the ADM rate improvement (95% CI: 8.2 to 9.8) among hospitals in the highest quartile of visit rates in 2018, were attributable to regression to the mean.

Conclusions: It appeared that nationally, and within quartiles of hospital performance, hospitals had improved their performance on this measure of outpatient chemotherapy quality. Some structural features of the measure reporting may limit its ability to stratify hospitals and may make it difficult for hospitals to improve their performance.

86

Exposure to State-level Lesbian, Gay, and Bisexual Policy Protections Reduces Disparities in Substance Use

Guan A, Wesson P, Glidden DV, Hamad R, Tan JY, Gomez, SL

Purpose: Compared to the general population, lesbian, gay, and bisexual (LGB) individuals have higher rates of tobacco and alcohol use, which likely contribute to disparities in chronic diseases (including cancer). Modifiable upstream factors, such as social policies, may be targeted to ameliorate these disparities. Protective social policies are associated with reducing tobacco and alcohol use among LGB people. We set out to investigate whether exposure to these policy protections lead to long-term reductions in substance use for LGB people.

Methods: Data from waves 3 (2001-2002) and 4 (2008-2009) of the National Longitudinal Study of Adolescent to Adult Health were used to assess the impact of exposure to LGB state policy protections during emerging adulthood (age 17-26) on substance use in young adulthood (age 24-32). We defined LGB state protections as a composite variable based on four policies relevant to sexual minorities. We used adjusted multi-level Poisson models to estimate associations between youth exposure to LGB state protections and long-term reductions in substance use disparities in adulthood.

Results: Youth exposure to LGB state protections were associated with significant and sustained reductions in tobacco use for LGB adults. LGB individuals in states with fewer protections had significantly higher rates of tobacco use (PR = 1.43, 95% CI 1.29 to 1.58) and binge drinking (PR = 1.36, 95% CI 1.19 to 1.55) compared to heterosexuals. However, in states with more protections, the tobacco use disparity was reduced by 14% (PR = 1.23, 95% CI 1.01 to 1.49), and the binge drinking disparity was no longer statistically significant (PR = 0.99, 95% CI 0.73 to 1.34).

Conclusion: Youth exposure to LGB policies can have long-term impacts on LGB substance use behaviors and reduce disparities in cancer. Notably, associations between these state protections and substance use were not observed among heterosexual individuals, supporting the specificity of these targeted policies. Continued evaluation of policy protections is critical to safeguarding the health of the LGB community, especially considering the potential erosion of these targeted protections in the current social landscape.

87

Health System Leader Views on Multi-Level Interventions to Increase Lung Cancer Screening

DiCarlo M, Jackson H, Indictor A, Thompson LA, Shimada A, Burgess N, Blaker J, Johnson M, Felix T, Bittner Fagan H, Careyva B, Reynolds H, Sifri R, Zhang Y, Hamadani R, Zhan T, Myers RE

Purpose: Lung cancer is the leading cause of cancer death in the United States. Unfortunately, lung cancer screening (LCS) rates remain low, with <10% of eligible individuals undergoing screening. Health system support is needed to raise these rates, but most have provided modest support thus far. As part of a larger research study, we conducted a key-informant interview with leaders of four health systems to learn their views about barriers to and facilitators of LCS.

Methods: Interviews were conducted with leaders from Christiana Care Health System (CCHS), Jefferson Health (JH), Lehigh Valley Health Network (LVHN), and Penn State Health (PSH). Guided by the Consolidated Framework for Implementation Research (CFIR), the research team developed an interview guide to elicit respondent views of provider and patient support interventions designed to increase LCS rates. We audio-recorded each interview and prepared written transcripts. Using NVivo qualitative analysis software, two research coordinators reviewed and coded each transcript independently. The reviewers discussed instances in which there was disagreement about coding and reached consensus.

Results: We completed interviews with 39 of 41 invited health system leaders (CCHS: 7, JH:14, LVHN: 7, PSH: 11) and identified three major response categories: system, provider, and patient. The system category focused on the value of quality metrics (outer domain) and coordinating of intervention implementation (inner domain); the provider category highlighted the need for provider training and incentives (inner domain) and support for practice personnel (individual domain); and the patient category underscored the importance of screening costs (inner domain) and patient outreach (individual and process domains).

Discussion: These findings provide health systems with important insights into steps that can be taken to operationalize strategies to engage healthcare providers and patients in the process in increasing LCS in diverse populations.

88

NCI Cancer Prevention Fellowship Program: Providing Multidisciplinary Training and Expanding the Cancer Prevention Research Workforce

Faupel-Badger JM, Bowles H, Sherrer S, Zanetti K, Dent K, Swigart T, ZuWallack R

Purpose: The National Cancer Institute (NCI) Cancer Prevention Fellowship Program (CPFP), a multidisciplinary postdoctoral fellowship program onsite in Maryland, conducts periodic evaluations of the program and recently surveyed alumni who entered the program between 1987-2019 to assess current career outcomes and the impact of the program on those outcomes.

Methods: A survey was sent by email to CPFP alumni through Qualtrics with reminders during the period of May 14 through July 12, 2024. Of the 261 alumni recruited to complete the survey, 189 (72%) responded.

Results: Respondents were 71% female, 26% male and 72.1% White, 11.0% Asian, 8.7% Black/African American, 5.8% Hispanic/Latino and 4.1% Middle Eastern/North African. Alumni entered the CPFP across all years surveyed, 1987-2019. Over 93% of alumni had a PhD or equivalent, and 5.2% had an MD as the terminal doctorate degree. Among the alumni, a variety of different disciplines were represented (behavioral/social sciences 43%, biological/biomedical sciences 19%, epidemiology/public health 67%, medicine 13%, nutrition 15%, and mathematical/physical sciences and other 19%) and over half (52.5%) of the alumni identified with two or more disciplines. A unique and essential component of the CPFP and its multidisciplinary focus is an emphasis on incorporating public health principles into cancer prevention research. To this end,113 respondents indicated having received a Master of Public Health as part of their CPFP experience, thus extending their scientific expertise into new areas. Alumni were employed across all career sectors (39.4% government, 39.5% academia, 10.8% private companies, 10.3% other) and, similar to an evaluation conducted in 2012, 87.8% of alumni reported working in the field of cancer prevention and control with 49.2% indicating this was over half of their effort. Over 80% of alumni indicated the CPFP was extremely or very beneficial in both helping the alumni achieve their career goals and influencing their career trajectories.

Conclusions: Data from this recent evaluation demonstrates the CPFP model of cancer prevention training continues to retain a multidisciplinary cadre of scientists in the field and is seen as highly influential in the subsequent career trajectories of alumni.

89

Catalyzing Patient Voice in Cancer Research: A Case Study from the CARE Community Research Fellows Program with Yale Cancer Center

Suttiratana SC, Santilli A, Singleton E, Khubchandani J, Greenup R, Lewis J, Nunez-Smith M

Community engagement programs have emerged across cancer research programs in response to funders and calls for translational science equity.

Purpose: Developed by Community Alliance for Research and Engagement (CARE) in 2018, the Community Research Fellows© (CRF) program builds sustainable networks of community members, equipped with knowledge, skills, and confidence to advance community-engaged research. This case study describes the CRF program; overall program metrics; perspectives on participation; and the journey of one team, exploring surgical amastia after mastectomy among women of color, from application through manuscript publication.

Methods: Compiling program evaluation data with research notes and participant accounts, the case study highlights CRF program participation from CRF, investigator, and administrator perspectives, as well as the successes and setbacks shared through a 2-year research process that extended beyond the team's initial program assignments.

Results: Partnering with Yale Cancer Center, CARE adapted its curriculum to focus on cancer and state cancer inequities. In the 9-month "citizen scientist" program, community members attend trainings and embed with a cancer research team for 3-5 hours. per week. Cancer research teams learn about regional communities, and health-related inequities before welcoming community members into their teams for a "front row seat" to research science. Among 37 teams that have hosted 58 CRFs to date, partnerships between CRFs and research teams have ranged from consultative engagement to collaborative study design. Participants from 2021-2023 cohorts experienced statistically significant increases in confidence in engaging with researchers ($p<0.02$) and for multiple knowledge categories including how to conduct research, research methods, types of data, CBPR, and health equity ($p<0.05$). Research teams and CRFs reported high satisfaction. The case elevates training, team climate, and recognizing strengths as mechanisms to co-create bidirectionally productive experiences.

Conclusion: The CRF program shines as an example of community-research engagement that flexibly supports efforts along the engagement continuum and has catalyzed inclusion of community voice across a cancer center's research efforts.

90

Conceptual Framework and Evaluation Approaches Used to Promote Cancer Community Engaged Research: Scoping Review

Keeler K, Carritt N, Fitzpatrick B, Hymel E, Idoate R, Kabayundo K, McCullough J, Napit K, Watanabe-Galloway S

The P30 Cancer Center Support Grant (CCSG) funds cancer centers across the U.S., supporting research in cancer prevention, detection, and treatment In 2016, the National Cancer Institute required cancer centers to establish Community Outreach and Engagement (COE) offices to address their catchment areas' unique needs. However, the diversity in COE structures across 72 centers complicates the evaluation of their collective impact on reducing the cancer burden. A better understanding of the operationalized definition of community engagement is crucial for effective evaluation. This study aims to define cancer community outreach and engagement (CCOE) and explore the frameworks and metrics used to assess CCOE impact through a PRISMA-ScR-guided scoping review. Searches of MEDLINE, CINAHL, PsycINFO, EBSCOhost, EMBASE, and Google Scholar yielded 71 relevant articles. Deductive-Inductive-qualitative analysis of 59 articles identified four emergent themes in relation to COE evaluation: : defined stakeholders, resource exchange, collaborative relationships, and mutually beneficial outcomes. Notably, defining stakeholders and assessing collaborative relationships were less frequently referenced (n=14), despite their importance in driving successful engagement activities. While outcome-based measures were robust, the articles often lacked clarity regarding mutual benefits with community stakeholders. Furthermore, elements of community engagement emerging from the engagement definitions were underrepresented, with many relying on simple survey data or counts. This review underscores the significant variability in definitions, frameworks, and metrics across cancer centers, highlighting the need for standardized approaches to evaluate the collective impact of community-engaged research and sharing potential constructs to measure.

91

Interest and Capacity among NCI Community Oncology Research Program (NCORP) Practices to Participate in a Lung Cancer Caregiver Intervention: Findings from WF-2300CD

Nightingale CL, Levine BJ, Snavely AC, Farris MK, Price SN, Adonizio CS, Tingen MS, Graves KD, Foust M, Dingman C, Danai J, Sheedy JE, Morris BB, Hancock JS, Weaver KE

Purpose: Community oncology clinics may experience barriers to participating in caregiving research but are vital to enhancing equity and producing representative findings. In preparation for a large, multi-site efficacy trial to test the Caregiver Oncology Needs Evaluation Tool (CONNECT) in community oncology practices, we assessed predictors of practice interest in participation.

Methods: Cancer care delivery research leads or other designees at NCORP practices completed a REDCap survey to assess likelihood of, and capacity and barriers to, participation in a future trial to test the efficacy of CONNECT to reduce lung cancer caregiver burden and distress. Practice capacity to participate was defined as estimating >5 dyad accruals per quarter and ability to identify key study implementers. Logistic regression was used to assess practice characteristics (rural/urban, size, capacity, study topic as a perceived barrier yes/no) associated with interest.

Results: 126 practices participated. 85% reported they were very/somewhat likely to participate in the future trial. Although 90% estimated >5 eligible dyads per quarter, only 44% estimated >5 accruals; 74% reported they could identify key study implementers. Overall, 37% of practices qualified as having capacity. 51% reported experience with recruiting dyads. While 56% were unsure if dyad recruitment would be a barrier to participation, 60% reported successful participation would not be improved by including only caregivers. Practices were more likely to be interested in participating if they were larger (>1000 annual cases) (P=.04) and had capacity to participate (P=.02).

Conclusion: Practices expressed strong participation interest for the future trial, but a majority lacked capacity, primarily due to low estimated dyad accruals. Training focused on dyad recruitment, especially among smaller practices, may improve confidence in recruiting dyads and capacity. Investigators should consider study designs that maximize support and minimize burden on local staff to improve equitable participation. These findings, in conjunction with pending findings from our ongoing multi-site feasibility trial to test CONNECT in NCORP practices (WF-2301CD), will be considered with our advisory group to plan the future trial.

92-T

Social Capital and Cancer Control Behaviors in African Americans: A Multi-Method Analysis of National Survey Data and Qualitative Interviews

McCullers AC, Saavedra TF, Choksi VA, Gray HJ, Malhotra RA, Ogunmiloro MI, Scanlon NJ, Knott CK

Purpose: This study aims to triangulate 2008 quantitative survey data with contemporary qualitative perspectives on how social capital may facilitate cancer control behaviors in African Americans (AA).

Methods: This study co-analyzes survey data from the Religion and Health in African Americans (RHIAA) survey and interview data from the related study, Families, Friends and Neighborhoods (FFAN). In 2008, a nationally representative sample of 792 AA adults were surveyed on religion, social capital and health. 292 participants were re-surveyed in 2010. Social capital was measured using a 9-item scale, which covers social support, interconnectedness and community participation. In 2023, 82 AA and individuals that work in AA communities were interviewed to provide insights into the connections between neighborhood, psychosocial resources, and cancer control behaviors. Interviewees were residing or working in CT, AL, MD, or MO. Interview notes on perspectives of social support and health were analyzed via modified thematic analysis. Survey and demographic data for both studies were analyzed using SPSS version 27.0.

Results: The average social capital score among RHIAA participants was 26.4 (SD = 4.89) out of a possible 36, indicating moderately high levels of social capital. Ideas expressed in FFAN interviews aligned with constructs measured in the RHIAA survey, with participants sharing insights grounded in themes of 1.) friends and family members as profound shapers of health behaviors, 2.) social networks as providers of health information, and 3.) community interconnectedness and belonging as a mental health support. Not measured in the original survey, but expressed in interviews were insights around loss of community care in the wake of disaster (e.g., the COVID-19 pandemic).

Conclusion: Findings indicate that social capital continues to play a critical role in facilitating cancer control behaviors among AA, with both historical and contemporary data highlighting the importance of social networks, family, friends, and community. Future work should focus on adapting community interventions to address the evolving role of social capital in promoting healthy behaviors, particularly since the COVID-19 pandemic and climate-change-driven catastrophes.

Lifestyles Behavior, Energy Balance & Chemoprevention

93

A Comprehensive Review and Meta-Analysis on Iron Consumption, Body Iron Status, and Cancer Risk in Postmenopausal Women

Li J, Yu W, Han Z, Chen L, Huang X

Purpose: This study aims to evaluate the association between iron intake and body iron status cancer risk.

Methods: We performed a literature search of PubMed, Scopus, Cochrane, Web of Science up to Feb 2024. Studies reporting risk estimates for cancer for tissue or serum iron or ferritin levels and estimated dietary heme iron intake levels in post-menopausal women were included. Information on study characteristics and outcomes was extracted independently by two authors in accordance with PRISMA guidelines. Relative risks were pooled across studies using random effects meta-analyses.

Results: A total of 65 studies were incorporated in the full-text review, of which 11 were suitable for meta-analysis of a single iron status metric. 4 studies focused on the correlation between breast cancer and tissue/serum iron/ferritin, involving 33,549 post-menopausal women, while 5 studies examined the relationship between breast cancer and dietary heme (animal-source) iron, encompassing 257,089 non-overlapping post-menopausal women. One study examined the correlation between serum iron and ferritin exposure and renal cancer risk, while the other investigated the relationship between serum ferritin levels and colon cancer risk. The serum ferritin groups, comparing the highest to the lowest quintile/quartile, indicate a 6% (95% CI: -15%, 26%; I2: 42%) elevated risk of overall cancer (including breast, renal, and colon cancers). A 9% elevated risk (95% CI: -31%, 48%; I2: 55%) for overall cancer risk (renal cancer, breast cancer) was seen for tissue/serum iron levels. All studies concentrated on the evaluation of breast cancer risk in relation to dietary iron intake. When comparing higher tissue/serum iron biomarker groups to the baseline lower-level groups, the pooled increase in risk is 5% (95% CI: -8%, 19%). Excluding the prior and smaller studies within the overlapped sample, the aggregated breast cancer risk elevation is 6% (95% CI: -13%, 24%).

Conclusions: In postmenopausal women, heme iron consumption and serum iron concentrations may correlate with an elevated overall cancer risk, especially for breast cancer. Despite the absence of statistical significance, the findings may warrant public health consideration due to the prevalent intake of heme iron-rich dietar

94-T

Accelerometer-Measured Physical Activity, Sedentary Behavior, and Physical Activity-Related Cancer Incidence among Adults in the Hispanic Community Health Study/Study of Latinos (HCHS/SOL)

Hyde ET, Evenson KR, Sotres-Alvarez D, Cuthberton CC, Agalliu I, Gallo LC, Talavera GA, Parada H

Purpose: To examine the associations between accelerometer-measured physical activity (PA) and sedentary behavior (SB) and incidence of 13 PA-related cancers among adults in the Hispanic Community Health Study/Study of Latinos (HCHS/SOL).

Methods: We included 11,647 adults from the HCHS/SOL cohort without a history of cancer who wore an Actical accelerometer on the hip for one week at baseline (2008-2011). From the accelerometer, we derived counts per minute, average daily minutes of light PA, moderate-to-vigorous PA (MVPA), total PA, and SB, and daily step counts. Participants were followed from their baseline clinical assessment to December 31, 2021 through linkages with four state cancer registries to ascertain incident PA-related cancers, which was defined as a composite outcome variable of the following 13 site-specific invasive cancers previously shown to be inversely associated with self-reported MVPA in a general population of adults: esophageal, liver, lung, kidney, gastric, endometrial, colon, head and neck, rectal, bladder and breast cancers and leukemia and multiple myeloma. Covariate-adjusted survey Cox regression models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for the associations of baseline accelerometer measures and PA-related cancer risk. We also examined whether associations were modified by sex, age, and body mass index.

Results: We identified 279 incident invasive PA-related cancers over an average follow-up of 10.8 years (IQR=10.2-11.9 years). PA-related cancer HRs (95% CIs) comparing the highest tertile of the accelerometer measure to the lowest tertile were 1.12 (0.70-1.79) for counts/min, 0.84 (0.50-1.42) for light PA, 1.26 (0.82-1.93) for MVPA, 0.88 (0.54-1.43) for total PA, 1.14 (0.70-1.84) for SB, and 1.07 (0.70-1.64) for steps. Associations did not vary by sex, age group, or body mass index.

Conclusions: There was no evidence that accelerometer-measured estimates of PA and SB were associated with PA-related cancer risk in US Hispanic/Latino adults of diverse backgrounds.

95

Assessing Dynamic Relationships Between Distressing Symptoms and Attitudes Toward Health Behaviors Among People Receiving Radiation Therapy

Robertson MC, Funk-Lawler R, Barrett Z, Henson C, Pope ZC, Businelle MS

Purpose: The purpose of this study was to assess the relationships among distressing symptoms and attitudes toward energy balance-related behaviors during and beyond administration of radiation therapy for cancer.

Methods: We conducted a secondary analysis of data from a randomized controlled pilot study. Participants completed ecological momentary assessments (EMAs) throughout an 8-week supportive care intervention. EMA items assessed daily distressing symptoms (independent variables [IVs]) and asked participants daily whether felt they "do not get enough physical activity" (PA) and "do not eat enough fruit and vegetables" (F&V; dependent variables [DVs]). Those who responded "yes" were asked about their readiness to change these behaviors. We fit generalized multilevel models regressing both DVs on each IV, adjusting for covariates.

Results: Participants' (N=57) diagnoses included breast (23%), gynecological (21%), and head and neck cancers (56%). About 41% of participants were diagnosed with stage III or IV cancer, 39% reported a household income of <$40K, and 32% lived in a rural residence. Most participants responded "yes" to each DV at least once (63%). Acute radiotherapy completion (vs. active treatment) was associated with reporting insufficient PA (OR = 3.50; P =.003) and F&V consumption (OR = 4.62; P <.001). For within-person analyses, tiredness/fatigue, pain, and number of treatment side effects (e.g., decreased appetite) were associated with reporting insufficient PA (OR range: 1.21-1.66; all Ps<.05). Only number of treatment side effects was associated with reporting insufficient F&V consumption (OR = 1.21; P=.007). Readiness to change was moderate (e.g., 6.5/10). Number of treatment side effects was negatively associated with readiness to exercise (β = -0.24; P=.01). Elevated anxiety, depressive symptoms, frustration, pain, and stress were positively associated with readiness to eat more F&Vs (β range: 0.25-0.41; all Ps<.05).

Conclusions: Acute radiotherapy completion was associated with dissatisfaction of PA and F&V consumption. Distressing symptoms were associated with readiness to change. Results highlight contextual factors that may be associated with receptivity to health-promoting interventions among people completing radiotherapy.

96-T

Association of Renal Cell Carcinoma Grade and Stage with Obesity and Obesity Associated Factors: A Cross-Sectional Study

Shrivastava Sakshi, Kauffman Eric, Rudra Carole B, Lee Benjamin R, Chipollini Juan, Batai Ken.

Purpose: This study explored the associations of BMI and obesity related factors with renal cell carcinoma (RCC) pathological characteristics (grade and stage) to better understand obesity paradox in RCC.

Method: We analyzed data from Roswell Park Comprehensive Cancer Center (Roswell Park) and University of Arizona (UArizona). Logistic regression models were used to estimate odds ratios (OR) and 95% confidence intervals (CI) for two outcomes: high-grade RCC and advanced-stage RCC. The primary exposure of interest was BMI, categorized as normal weight, overweight, and obese.

Results: A total of 1,526 cases from Roswell Park and 423 cases from UArizona were included. In both datasets, older age compared to age <50 years was associated with reduced odds of obesity. Former smoking status and American Indian ethnicity were associated with being obese in the UArizona dataset. In both datasets, older age and smoking were associated with increased odds of high-grade RCC. In the Roswell Park dataset, BMI showed a significant inverse association with high-grade RCC, and weight loss at the time of diagnosis was associated with higher odds of high-grade RCC (OR, 3.84; 95% CI: 2.40-6.15; p= <0.001). In the UArizona dataset, being overweight BMI compared to BMI <25 increased the odds of high-grade RCC, (OR, 2.15; 95% CI, 1.17, 3.93; p= 0.01). For advanced-stage RCC, no common factors were observed across both datasets. In the Roswell Park dataset, older age was associated with higher odds of advanced-stage RCC across all age groups with the highest odds observed for individuals aged 60-69 (OR, 2.77; 95% CI: 1.75 -4.36; p = 0.001). BMI also showed a significant inverse association, and weight loss was linked to higher odds of advanced-stage RCC (OR, 3.98; 95% CI: 2.67-5.94; p = 0.001). In the UArizona dataset, being overweight was associated with increased odds of advanced-stage RCC (OR, 1.93; 95% CI: 1.01-3.67; p = 0.04).

Conclusion: Higher BMI was linked to a lower likelihood of severe RCC pathological characteristics consistent with the obesity paradox. However, obesity-related factors, older age, weight loss, and smoking, were associated with higher odds of RCC severity.

97-T

Can a Clinical Workflow Algorithm Designed to Integrate Exercise and Rehab Services from Diagnosis Onward Promote Exercise Engagement Throughout Breast Cancer Care?

Maslana KE, Haverbeck Simon L, Saviers-Steiger C, Dunston ER, Galyean P, Kimball ER, Mendez J, Zickmund SL, Ulrich CM, LaStayo PC, Steinberg D, Noren CS, Finch A, Seckinger L, Braun EH, Chipman JJ, Hansen PA, Oza S, Brownson KE, Coletta AM

Purpose: Determine if the Comprehensive Oncology Rehabilitation and Exercise (CORE) clinical workflow algorithm facilitates exercise engagement from breast cancer diagnosis throughout care compared with standard of care (SOC) in women newly diagnosed with stage I-III breast cancer with plans for surgery as first-line treatment.

Methods: A pilot, mixed-methods trial randomized 72 women with newly diagnosed stage I-III breast cancer with plans for surgery as first-line treatment, stratified by physical activity (PA) guideline adherence (yes/no), into CORE or SOC. CORE uses a triaging tool at routine breast cancer care visits to identify needed exercise and/or rehab services throughout care. Exercise engagement, defined as time spent in moderate-vigorous PA (MVPA), was measured via wrist-worn accelerometry for one week at three points aligned with routine breast surgical oncology visits: surgical oncology consultation (i.e. baseline), post-surgery, 24-weeks post-surgery (i.e. end of study). Accelerometer data was evaluable if participants wore the device for ≥8 hours on ≥3 days. Total MVPA minutes were compared between CORE and SOC at 24-weeks post-surgery using linear regression, with models adjusted for age, cancer stage, surgical oncologist, and adherence to PA guidelines. Median change in MVPA from baseline was also evaluated.

Results: A total of 38 participants were considered evaluable (CORE: n=24, SOC: n=14). Participants had a mean age of 59 years (SD:12), were primarily white (79%), with stage 1 breast cancer (94%). Significant differences were not observed between groups in age, race, cancer stage, baseline self-reported physical function, or adherence to PA guidelines. MVPA at 24-weeks was lower in CORE compared with SOC, with an adjusted mean difference of -12 minutes (95% CI: -57, 33). Median change in MVPA from baseline was 12 minutes, favoring the CORE group (95% CI: -37, 40).

Conclusions: The CORE clinical workflow algorithm exhibits promise in promoting exercise engagement from time of diagnosis and throughout breast cancer care.

98

Characteristics of Anti-Obesity Medication Patients in a Large Health System: The CAMP Study

Glanz, K, Scheffey, K, Kwong, P, Tewksbury, C.

The availability of new anti-obesity medications (AOM's) known as GLP-1-RA's (glucagon-like peptide receptor agonists) in recent years, and their approval by the FDA for weight management, has ushered in a new era in weight management. To date, there are few reports that characterize patients receiving prescriptions for AOM's and reporting on their experience with obtaining the drugs and using them in non-clinical trial settings. This study was a first step toward describing patients who were prescribed AOM's, with the longer-term goal of surveying patients on their experience with payment and insurance coverage; accessing the medications; response to the medications including side effects and weight loss; and psychological, behavioral and social experiences (e.g., shared decision-making with medical providers, stigma, related nutrition counseling, social support). This study used data extracted from medical charts to identify and characterize patients with prescriptions for anti-obesity medications (AOMs) for a one-year period beginning in June 2023. Adult outpatients prescribed an AOM by a medical provider were included. The dataset includes patients who received a prescription for two major FDA-approved medications for weight management: semaglutide and tirzepatide (Wegovy and Zepbound). Descriptive statistics and exploratory analyses were conducted to identify characteristics of patients who received AOM orders. There were 21,836 patients who received AOM prescriptions during the one-year observation period, with a median age of 49 years, 77% female, and 36% non-white, with median BMI of 35 and median weight of 215 lbs. Prescriptions were written mostly by Internal Medicine physicians (62%), followed by endocrinology (18%) and cardiology (4%). About half the prescriptions were sent to hospital pharmacies, and half to community pharmacies. Over 80% of patients had private insurance and 10% used Medicare to cover the drugs (co-pays were not available in medical records). 85-95% reported low risk for financial strain, food insecurity, and housing instability. The findings will be used to design and conduct a survey of patient perceptions, experiences, and issues related to AOMs.

99-T

Could Dosing on Muscle Mass Optimize Adherence to Chemotherapy and Improve Chemotherapy-induced Peripheral Neuropathy?

Cao A, PhD, Caan BJ, DrPH, Binder A, ScD, Meyerhardt JA, MD, Schmitz KH, PhD, Cespedes Feliciano EM, ScD

Background: Chemotherapy adherence, a critical determinant of cancer prognosis, is often negatively affected by toxicities. Current dosing paradigms are primarily based on body surface area, despite evidence indicating that muscle mass is independently associated with chemotoxicity and survival. We assessed the association between chemotherapy dose normalized to muscle mass and adherence to chemotherapy and chemotherapy-induced peripheral neuropathy (CIPN) in patients with stage II/III colon cancer, aiming to evaluate the potential of considering body composition in chemotherapy dosing. Methods: We included patients from the FORCE trial who received FOLFOX regimen. Skeletal muscle area (SMA) was quantified via computed tomography at L3 level. The primary exposures were doses of 5-fluorouracil (5-FU) and oxaliplatin relative to SMA (mg/cm2). Chemotherapy adherence was assessed by relative dose intensity (RDI), defined as the ratio of received to guideline-recommended dose intensity. CIPN was evaluated using the CIPN20 questionnaire. Multivariable linear regressions were applied. Receiver operative characteristics (ROC) curve was used to determine optimal cutoff for 5-FU/SMA and oxaliplatin/SMA in predicting RDI≥85%.

Results: Ninety-four patients were included (mean age: 54.3ffl12.4yrs; 48.9% female). The average 5-FU/SMA and oxaliplatin/SMA doses were 39.1ffl7.4mg/cm^2 (range: 26.1-58.5) and 1.2ffl0.2mg/cm^2 (range: 0.8-1.8), respectively. Higher 5-FU/SMA and oxaliplatin/SMA were associated with lower RDI (5-FU/SMA: β= -0.81ffl0.32, P=0.01; oxaliplatin/SMA: β= -25.19ffl10.55, P=0.02). Patients with lower RDI reported more motor and sensory CIPN symptoms (P<0.02). Optimal cutoff values for achieving RDI≥85% were 38.5 mg/cm2 for 5-FU and 1.2 mg/cm^2 for oxaliplatin. Based on the cutoff values, patients who were over-dosed according to their muscle mass reported worse CIPN compared to those who were under-dosed (P≤0.01).

Conclusion: Higher doses of 5-FU and oxaliplatin relative to muscle mass are associated with reduced chemotherapy adherence and worse CIPN, suggesting that muscle mass-based dosing may mitigate toxicities and improve chemotherapy adherence. Further studies exploring body composition-based dose adjustments, starting with metastatic settings, are warranted.

100-T

Developing a Randomized Controlled Trial to Improve Oral and Systemic Health Outcomes in Cancer Survivors: Protocol Overview

Smith, DI, Dash, C, Williams N, Leby, C, Nyrienda, N, Makambi K, Adams-Campbell, LL

Purpose: Over 40% of cancer survivors experience oral complications from cancer treatment (e.g., oral mucositis), which substantially impacts quality of life and increases risk for chronic systemic diseases (e.g., diabetes). Few studies have investigated oral and systemic health outcomes in cancer survivors from an integrative lens. The Facilitated Lessons on Oral and Systemic Health in Survivors (FLOSS) Project is a theory-driven, telehealth-delivered randomized controlled trial (RCT) designed to improve oral and systemic health outcomes among cancer survivors in the Washington, DC Metropolitan area.

Methods: Grounded in Social-Cognitive Theory, The FLOSS Project is a 2-arm, 6-month RCT to evaluate the efficacy of an oral telehealth intervention (THI) in 1) reducing cancer-related oral complications, 2) improving oral health-related behaviors and quality of life, and 3) reducing systemic inflammation compared to usual care (UC). Inclusion criteria are: a) cancer survivors >6 months post-primary treatment, b) 25-75 years of age, and c) own a smartphone. Exclusion criteria are: a) all head/neck cancer survivors, b) <25 or >75 years of age, c) recurrence/second cancers, and d) unable to provide informed consent. Eligible participants (N= 100) will be recruited using community-based approaches and randomized to THI (n=50) or UC (n=50). THI participants will engage in six sessions purposed to increase oral-health related knowledge and self-efficacy. Oral health coaches employ motivational interviewing and behavior change techniques including: self-monitoring of oral hygiene behaviors, goal-setting, and implementation planning. Assessments at baseline, 6- and 12-months will capture oral health outcomes via intraoral imaging (i.e., mucositis, gingival inflammation, tooth loss) and systemic outcomes via biospecimen collection (i.e., blood inflammatory markers [IL-1, IL-6, TNF-alpha]; oral microbiome [saliva]). Self-report measures will assess quality of life, health behaviors, and sociodemographics.

Results/Conclusions: Responsive to national research priorities, The FLOSS project is one of the first theory-driven, randomized controlled trials emphasizing biological and behavioral pathways informing oral and systemic health outcomes in cancer survivors.

101-T

Effects of a Randomized Weight Loss Trial on Health-Related Quality-of-Life and Fatigue in Breast Cancer Survivors: The Lifestyle, Exercise and Nutrition (LEAN) Study

Puklin LS, Eldridge EH, Li F, Lin, IH, Ferrucci LM, Cartmel B, Harrigan M, Sanft T, Irwin M.L.

Purpose: Survivorship guidelines recommend weight management for breast cancer survivors with overweight or obesity. While many non-weight loss focused lifestyle trials in this population have shown positive effects on body composition, biomarkers, and quality of life (QoL), fewer have focused on secondary effects of weight loss on QoL and fatigue. This secondary analysis evaluated the effects of a 6-month weight loss intervention on QoL and cancer-related fatigue among breast cancer survivors with a BMI>25 kg/m^2.

Methods: The Lifestyle, Exercise, and Nutrition (LEAN) trial randomized 151 breast cancer survivors with BMI≥25 kg/m^2 to a 6-month weight loss intervention (n=93) or usual care (UC: n=58). QoL was measured via the Short-Form-36 (SF-36) and fatigue was measured via the FACIT-F questionnaire at baseline and 6-months. We compared mean changes in outcomes between groups with mixed-model repeated-measures analysis. We assessed effect modification by baseline SF-36 component scores and FACIT-F, and within the intervention group evaluated effects by percent weight loss.

Results: Participants were, on average, 58.1 (ÔÇffl7.8) years of age and 2.9 (ÔÇffl2.5) years from diagnosis. At 6 months, the intervention group had greater improvements in SF-36 physical component score (PCS) (mean difference [md]: 4.2; p=0.003); SF-36 subscales of physical health (md: 4.1; p=0.02), general health (md: 3.9; p=0.001), and vitality (md: 4.1; p=0.001); and fatigue (md: 2.9; p=0.01) compared to UC. The intervention effect at 6-months was more pronounced in women with worse QoL (PCS<50: standardized mean) and more fatigue at baseline (FACIT-F<42: median score) compared to those with better QoL (PCS≥50) and less fatigue (FACIT-F≥42) (I: 8.6 vs. UC: 0.1; p=0.004; I: 5.9 vs. UC: 0.8; p=0.04). In the intervention group, those who lost ≥5% weight had greater improvement in the SF-36 PCS (5.6 vs. 2.1; p=0.04) and borderline improvement in fatigue (5.7 vs. 2.8; p=0.05) compared to with <5% weight loss.

Conclusion: A 6-month weight loss program for breast cancer survivors with BMI>25 kg/m2 improved QoL and reduced cancer-related fatigue. These findings support that weight loss programs could improve not only weight, but also QoL outcomes for breast cancer survivors with overweight or obesity.

102

Evaluating Low Participation in Healthy Behavior Medicaid Mandated Tobacco Cessation Programs

Mkuu RS, Glymph CC, Lurk PA, McCraney M, Hall JM, Rivero-Mendoza, D, Chakrabarti C, Cogle CR.

Purpose: Tobacco use remains a significant public health issue, particularly among individuals with low incomes, including Medicaid recipients, who often face multiple barriers to quitting. In response, Florida Statutes ¬ß409.973 (2022) mandates that Medicaid Managed Care Organizations (MCOs) establish a medically approved tobacco cessation program. However, participation in these programs is low. This study aimed to identify barriers influencing participation in tobacco cessation programs among individuals served by Medicaid MCOs in Florida.

Methods: We conducted a focus group interview with six Medicaid MCOs in Florida. Interview questions examined how members eligible for cessation programs are identified and enrolled, and how cessation programs are implemented.

Results: Members are primarily identified through nicotine dependency codes via claims data or Health Risk Assessments, (HRAs) which encompasses questions regarding demographic characteristics, current health status, habits, and risks. Members are enrolled via text messaging and case manager-led outreach. Barriers to enrollment and participation include inadequate knowledge about cessation programs among primary care physicians (PCPs), long wait times to enroll in cessation programs once referred, and difficulties navigating program websites. Recipients' incentives for participation in the programs, typically capped at $50, were deemed insufficient to motivate participation.

Discussion: Our findings suggest that enhancing PCP knowledge about the programs, increasing recipients' incentives, expanding the number of health coaches, and improving integration between cessation programs and health plans could address barriers and boost participation rates in cessation programs.

103-T

Exploring Dietary Self-Efficacy, Social Support, and Perceived Barriers as Working Social Cognitive Theory Mechanisms of the AMPLIFY Web-based Diet Intervention on Weight and Diet: A Preliminary Parallel Mediation Analysis

Kaur H, Pekmezi DW, Pavela G, Pisu M, Rogers LQ, Fontaine K, Kenzik K, Sayer RD, Wyatt HR, Demark-Wahnefried W

Purpose: Scalable and accessible web-based interventions that use digital platforms to promote healthy dietary behaviors and weight management among cancer survivors are increasing. However, there is a need to understand the mechanisms of action behind web-based interventions. This study explores whether the effects of the AMPLIFY web-based, diet intervention on adiposity and diet are mediated through the Social Cognitive Theory (SCT) constructs of self-efficacy, social support, and perceived dietary barriers.

Methods: A preliminary parallel mediation analysis was performed on baseline and 6-month data from 349 cancer survivors enrolled in the AMPLIFY diet trial. Adiposity was measured using body weight and waist circumference (WC), collected remotely. Caloric intake and diet quality were assessed using 2-day dietary recalls. Data on SCT mediators were obtained via validated online surveys.

Results: The AMPLIFY diet intervention significantly decreased body weight (path c' = -3.40 (0.60); p-value< 0.001), WC (path c' = -2.82 (0.76); p-value< 0.001), and caloric intake (path c' = -215.40 (59.98); p-value< 0.001), and improved diet quality (path c' = 4.33 (1.81); p-value< 0.05) among cancer survivors. The mediation analyses revealed that the effect of the AMPLIFY intervention on body weight was significantly mediated through reductions in perceived dietary barriers (indirect effect = -0.47 (0.23); 95% CI [-0.981, -0.094]). However, the mediating effect of perceived dietary barriers was not observed for WC, caloric intake, or diet quality models. The AMPLIFY intervention significantly improved self-efficacy (path a = 0.06 (0.02); p-value< 0.01) and social support (path a = 1.23 (0.42); p-value< 0.01). However, self-efficacy and social support did not emerge as significant mediators.

Conclusions: Understanding the "active ingredients" behind successful web-based diet interventions can help inform future programming of digital programs to promote weight management. Findings suggest that the AMPLIFY trial successfully decreased body weight by reducing perceived dietary barriers among cancer survivors. Future work is needed to elucidate the impact of social support and self-efficacy within digital programs.

104

Facilitators and Barriers to Implementation of a Mentored Community Gardening Intervention in Arizona

Skiba MB, Fox C, Miller D, Hall CA

Purpose: To identify facilitators and barriers of implementing a mentored community gardening intervention for cancer survivors in Arizona.

Methods: A cross-sectional survey was conducted among stakeholders (e.g., community gardeners, public health professionals, and clinicians) from July-September 2024 to identify and assess external and internal factors that can impact the scale-up and implementation of "Harvest for Health Together Arizona (H4H2-AZ)", an adapted mentored community gardening intervention for cancer survivors. Prior to taking the survey, participants were provided with the H4H2-AZ study protocol that was pilot tested in Southern Arizona with 25 survivors of skin cancer. The survey included quantitative measures (1-5 Likert scale) of intervention feasibility (FIM), acceptability (AIM), and appropriateness (IAM) and open-ended questions to assess perceived facilitators and barriers. Descriptive analysis was used.

Results: Of n=66, 76% identified as a master gardener, extension agent, or community gardener, 12% identified as a public health professional or clinician, and 12% identified as another community role. Respondents agreed that H4H2-AZ would benefit communities and individuals' health and well-being. Average FIM= 4.42 (0.66) AIM= 4.33 (0.66) and IAM= 4.56 (0.73) scores indicated H4H2-AZ as feasible, acceptable, and appropriate. Facilitators identified were mentoring, encouragement of physical exercise, increased fruit and vegetables access, demonstrations, and workshops. Barriers included cancer survivors not living in the area year-round, limited accessible gardening locations in rural areas, and sun exposure. Required resources identified included funding, materials and supplies, and participant physical ability. Respondents also recommended including survivors' family members to increase reach.

Conclusions: H4H2-AZ was perceived as a beneficial intervention with potential to improve the health of cancer survivors in Arizona. This study highlights the critical factors influencing implementation of a mentored community gardening intervention which must be considered for sustainability of impact. Further research is warranted to develop targeted strategies to address the identified barriers and enhance facilitators to implementation.

105-T

Feasibility and Acceptability of Manipulating Exercise Time of Day in Stage I-III Breast Cancer Patients Receiving Chemotherapy

Rodgers C, Hurtado J, Steiger CS, Taylor S, Youssif D, Ihediwa C, Curtis M, Chipman J, Kelley K, Coletta AM

Purpose: Evidence in other clinical populations suggests that manipulating exercise timing may promote optimal changes in important cancer-relevant health outcomes. Thus we aimed to determine the feasibility and acceptability of manipulating exercise timing in stage I-III breast cancer patients undergoing chemotherapy.

Methods: Stage I-III breast cancer patients who completed ≤50% of prescribed chemotherapy cycles, with an Eastern Cooperative Oncology Group score of 0-2, were randomized 1:1 to morning exercise (starting between 5-10am) or afternoon/evening exercise (3-8pm) over a 4-week intervention. Resistance training (RT) was home-based, supervised via telehealth twice/week, and worked all major muscle groups. The aerobic exercise (AE) prescription was 90-minutes/week at moderate-intensity was home-based, unsupervised, and recorded in weekly training logs. The trial was considered feasible if 75% of participants completed 75% of workouts in the assigned time window, and acceptable if ≥50% of identified themes from an exit survey were positive.

Results: Of 103 potentially eligible participants identified through pre-screening clinic lists, 55 declined participation, 14 were ineligible, and two were unresponsive. The top three reasons for declining participation were: lack of interest (n=22), scheduling conflicts (n=15), and health concerns (n=7). A total of 32 women enrolled in the trial. The majority were Caucasian (81%), non-Hispanic (90%), urban dwelling (84%), and with an average age (mean¬fflSD) of 48¬ffl9.5 years. Half of the participants withdrew; the main reasons were chemotherapy side effects (n=7) and family reasons (n=3). Another three failed screening before completing baseline. An analysis of all randomized participants revealed 50% completion of the prescribed RT sessions (4¬ffl4 sessions) and 52% of the weekly AE training sessions (47¬ffl70 min). Among participants who finished the trial, they completed 88% (7¬ffl1 sessions) of the prescribed RT sessions and 106% (95¬ffl74 min) of their weekly AE training. Exit interviews were positive but only completed by those who completed the trial.

Conclusion: Manipulating exercise timing in stage I-III breast cancer patients undergoing chemotherapy may only be feasible and acceptable in a subset of individuals.

106-T

Feasibility and Acceptability of the Comprehensive Oncology Rehabilitation and Exercise (CORE) Clinical Workflow Algorithm in Newly Diagnosed Stage I-III Breast Cancer Patients with Surgery as First-Line Treatment: A Mixed Methods, Randomized-Controlled Pilot Trial

Haverbeck Simon L, Saviers-Steiger C, Dunston ER, Kimball ER, Mendez J, Galyean P, Zickmund SL, Ulrich CM, LaStayo PC, Steinberg D, Noren CS, Finch A, Seckinger L, Braun E, Chipman J, Hansen PA, Oza S, Brownson KE & Coletta AM.

Purpose: The purpose of this 24-week, mixed-methods, randomized-controlled pilot trial was to determine the feasibility and acceptability of the Comprehensive Oncology Rehabilitation and Exercise (CORE) Clinical Workflow Algorithm designed to connect women newly diagnosed with stage I-III breast cancer, with plans for surgery as first-line treatment, to needed exercise and/or rehabilitation services throughout their cancer care.

Methods: A total of 72 newly diagnosed, stage I-III breast cancer patients requiring surgery as first-line treatment, were randomized 2:1 to the CORE algorithm or standard of care. CORE includes a triaging tool consisting of 12 questions total inquiring about self-reported habitual exercise engagement (modified Godin, 4 questions) and functional status (PROMIS Physical Function short form 8b). This tool was administered at the check-in desk of the following routine visits with breast surgical oncology: initial surgical consultation, post-operative, and 24-weeks post-operative. Responses to the tool triaged participants to one of three pathways within the algorithm: exercise service, rehabilitation service, or exercise self-management (not a service). The CORE algorithm was deemed feasible if ≥66% of participants in the CORE arm completed the triaging tool at the check-in desk of the initial surgical consultation visit, and among those who received a referral to a service pathway, ≥50% completed their referral. Acceptability was determined if ≥50% of the identified themes from participant focus groups were positive.

Results: Participants (n=61) were primarily white (n=46, 75%), non-Hispanic (n=55, 90%) with stage I disease (n=51, 84%) and a median age of 58 years. Among participants in the CORE arm (n= 40), 93% completed the triaging tool (n=37), and in those triaged to a service pathway (n=29), 62% completed their referral. Study participant focus groups revealed 75%, 100%, and 50% positive feedback within the following identified themes respectively: program aspects, program outcomes, and program improvement.

Conclusion: The CORE algorithm was feasible and acceptable in women newly diagnosed with stage I-III breast cancer, with surgery as first-line treatment.

107-T

Feasibility of a Remote Time-Restricted Eating and Mindfulness Intervention Focused on Risk Factors Associated with Early-Onset Colorectal Cancer Development in Young Adults: A Randomized Controlled Pilot Trial

Lima Oliveira M, Cares K, Hamm A, Nadeem S, Bogseth D, Klatkiewicz B, Overhiser T, Elias C, Li Y, Guo R, Oddo VM, Biggers A, Naylor KB, Chen Z, Pezley L, Peñalver Bernabé B, Gabel K, Sharp L. K, Bendinskas K, Webbe D, Tussing-Humphreys L.

Purpose: Increased adiposity and chronic psychosocial stress (CPS) are under investigation as drivers of the recent uptick in early onset colorectal cancer (EOCRC) in the United States and other Westernized countries.

Methods: We conducted a randomized controlled pilot trial evaluating time restricted eating (TRE) (daily ad libitum eating between 12-8pm and fast the remaining hours) and Mindfulness (complete the "Mindfulness for Beginners" course available in the Calm.com® app) among young adults with obesity and CPS to evaluate its feasibility and acceptability. This was an 8-week, parallel-arm study. Young adults (18-39 years old) with obesity (BMI ≥ 30 and ≤ 49.9 kg/m2) and a Perceived Stress Score (PSS) ≥14 indicating moderate to severe perceived stress were randomized to the following groups: TRE; Mindfulness; TRE & Mindfulness; or Control. The focus of study was on feasibility and acceptability, but we also explored changes in body weight, body composition; circulating metabolic, inflammation, and oxidative stress biomarkers; and intestinal inflammation.

Results: Forty-three participants completed the baseline data collection and were randomized. Overall acceptability of the trial was high. Participants were enrolled within a short period (10 months) and attrition rates were low (7%). Participants completed between 90-94% of weekly sessions across all study arms. Participants in the TRE group lost a mean of -0.85 (SD 5.58) lbs; Mindfulness group lost a mean of -4.62 (SD 10.19) lbs; TRE & Mindfulness group lost a mean of -4.21 (SD 7.49) lbs; and Control group lost a mean of -0.2 (SD 3.53) lbs. PSS scores decreased significantly within all arms except for Control; no between group differences were observed. There was a statistically significant decrease in high sensitivity C-reactive protein (hs-CRP) from baseline within the TRE arm only (-1.58; 95% CI: -3.08, -0.09). No other within or between group changes were found for total fat mass, visceral fat mass; circulating biomarkers; or intestinal inflammation.

Conclusion: This study was feasible and well accepted by the participants. Results were promising for showing decreases in body weight among the Mindfulness and TRE & Mindfulness arms, PSS for all intervention arms and hs-CRP within the TRE arm.

108

Free Time 4 Wellness: A Group Randomized Control Trial to Assess if Providing Childcare to Low Income Mothers Can Increase Physical Activity

Houghton LC, Gokal K, Magsamen-Conrad K, Oakley-Girvan I, Hirsch J, Qian M, Buchsbaum R, Niles C, Van Horn K, Moshier S, Martinez A, Flores A, Laine S, Vega M, Watterson J

Background: Free Time For Wellness, a co-designed intervention, intervenes on a structural barrier, access to childcare, to increase physical activity in low income mothers, ultimately to reduce cancer risk which is rising in young adults under 50.

Methods: This study comprises a 3-arm parallel cluster randomized controlled trial with low-resourced mothers living in New York City, including 720 participants across 24 sites. Sites are randomized into Arm A (contact control), receipt of free weekly fitness classes; Arm B, receipt of free childcare combined with free weekly fitness classes (intervention arm); and Arm C, receipt of free childcare combined with free weekly fitness classes and peer support activities (enhanced intervention arm). Physical activity is the primary outcome, measured using accelerometers, a self-reported questionnaire, and attendance data. Secondary outcomes (e.g., health status) and mediators/moderators (e.g., social support and cohesion) are assessed with baseline and follow-up questionnaires. Embedded ethnographic methods examine intersecting forms of social inequality shape women's experiences of physical activity and how real-world conditions shape the intervention implementation. A community advisory board provides quarterly input on participant facing materials. We present percent change in averages and proportions to summarize the main intervention effects on physical activity outcomes and other secondary outcomes.

Results: Half of the cohort earns less than <40% of the area median income. Of the current wave 1 sample, 91% returned their accelerometers and current retention is 87%. Self-reported moderate to vigorous physical activity increased 37% in the control, 53% in the intervention arm B and 96% in the enhanced intervention arm C. The proportion reporting high social cohesion decreased in the control arm by 2% but increased by 123% and 14% in intervention arms B and C, respectively. Depression increased in the control arm by 126%, but decreased by 100% and 43% in intervention arms B and C respectively.

Conclusions: Our preliminary results suggest that providing free childcare at fitness class increases self-reported physical activity, social cohesion and mental health in mothers.

109-T

Per-Child Breastfeeding Durations and Maternal Cancer Risk: A Systematic Review with Implications for Parental Leave Policies

Lee Argov E, Leisher SH, Yang W, Terry MB, Tehranifar P

Purpose: We systematically reviewed the evidence on maternal cancer risk and per-birth breastfeeding durations as a separate construct from lifetime duration, and thus better able to inform parental leave policies that facilitate each child's breastfeeding.

Methods: Two authors screened articles on "breastfeeding AND maternal/parent AND cancer/neoplasms" in English from Pubmed, Embase, and Web of Science (3192 articles, 478 screened, 46 included). Estimates for any per-birth breastfeeding duration and cancer were synthesized across the largest overlapping reference groups (never breastfed; 'more' vs. 'less'), constructs (per-birth, first, second, last, or single parity), within-study strata (age, menopausal status), and between-study traits (year, country income).

Results: 1,081 estimates were compiled (89% breast cancer). An inverse association between per-birth breastfeeding duration and breast cancer risk clustered between 10-30% reduced risk and for duration ranges of 2-12m per birth, with no apparent threshold. 'First birth' durations were most consistently and strongly associated with reduced breast cancer; while associations appeared more heterogeneous for low durations (<3 months) and for single parity women. More recent studies (>1980) showed greater consistency in results. Variation by country income was minimal. Premenopausal breast cancer estimates may be more sensitive to breastfeeding length. Non-breast cancer studies were decidedly lacking, though some studies found reduced endometrial and ovarian cancer risk after 3 months breastfeeding per birth.

Conclusions: Per-birth breastfeeding durations are distinctly relevant when designing policies surrounding birth (e.g. parental leave) than evidence that depends on several births, particularly given lower birth rates in recent years. Overall, this review supports the presence of an inverse association between the duration each child – possibly particularly the first – is breastfed and breast cancer risk; such protective effect is seen in as little as 3 months, with no identifiable threshold after which effects plateau. Non-breast cancers, and variation by subtype or social characteristics, particularly for groups with lower breastfeeding rates, were rarely examined yet warrant study.

110-T

Post-Diagnosis Smoking Cessation and Its Effect on Survival Outcomes in Head and Neck Cancer Patients: Findings from a Prospective Cohort Study

Mohebbi E, Guthrie G, Patil S, Fan R, Tan M, Wolf G, Rozek L

Purpose: This study aimed to evaluate the impact of smoking cessation after the diagnosis of head and neck squamous cell carcinoma (HNSCC) on overall survival (OS) and recurrence-free survival (RFS). While the benefits of smoking cessation are well-known, there is still a significant gap in understanding the long-term effects of quitting, particularly in HNSCC patients, emphasizing the need for more focused research.

Methods: We conducted a prospective cohort study involving 835 newly diagnosed HNSCC patients at the University of Michigan between November 2008 and October 2014. Participants were categorized into five smoking status groups: never smokers, former smokers, continued smokers, quitters, and intermittent smokers. A structured questionnaire was used annually to assess demographics, health behaviors including smoking history. We performed Kaplan-Meier survival analysis to plot unadjusted survival curves. Cox proportional hazards models were used to evaluate the effects of smoking status on survival outcomes, adjusting for potential confounders, including age, gender, cancer stage, body mass index (BMI), and alcohol use.

Results: Over an average follow-up of seven years, quitting smoking after diagnosis significantly improved OS in HNSCC patients. The adjusted hazard ratio (HR) for OS was 0.39 (95% CI: 0.22-0.69) at two years and 0.68 (95% CI: 0.45, 1.00) at five years compared to those who continued smoking. Among patients with oral cavity cancer, quitting led to a 72% reduction in death risk at two years (HR = 0.28, 95% CI: 0.12, 0.65). Intermittent smokers also showed improved OS (HR = 0.50, 95% CI: 0.31, 0.79) compared to continued smokers at all follow-up points. However, former smokers showed no significant OS differences.

Conclusions: This study highlights the critical importance of smoking cessation after HNSCC diagnosis, which is associated with improved OS, especially for oral cavity cancer patients. These findings underscore the need for smoking cessation interventions targeting HNSCC patients to improve survival outcomes and quality of life. Incorporating cessation programs into cancer care can significantly promote long-term health in this vulnerable population.

111-T

Sociocultural Factors Associated with Readiness to Engage in a Tobacco Cessation Program among an Ethnically Diverse, Underserved Community Sample

Chauhan V, Cosaj A, Garrett C, Moadel-Robblee A

Purpose: To explore sociocultural factors associated with readiness to engage in a tobacco cessation program in the ethnically diverse, underserved community of Bronx, NY.

Methods: Provider and self-referred patients from a large academic medical center serving a diverse, underserved community completed intakes prior to attending an 8-week tobacco cessation program, measuring stages of readiness, smoking history, self-reported psychological, drug and medical history, and ethnicity, race and gender. Intakes were administered over the phone by trained interns and staff, in English and Spanish, from a psycho-oncology program. Univariate analyses were performed to identify significant patterns related to readiness to quit smoking and uptake of the program.

Results: 184 patients participated in the intake of which 66% were female, 32% male, and 59% over age 60, with 44% identifying as African American and 36% as Hispanic. On intake, people over age 60 (66%) were more likely to report being ready to quit smoking by having cut down or recently quit than those under 60 (34%), X2=7.6(3), p=.05. Three times as many women (74%) smoked less than 10 cigarettes compared to men (26%), X2= 8.05(2), p=.005. A nicotine withdrawal profile that included psychological symptoms was more likely to be reported by Hispanics (62%) than African Americans (35%) or Other (50%), X2=9.82(4), p=.04. Those most likely to participate in the tobacco cessation program were women (44% vs. 24%), and those over age 60 (42% vs 28%), X2=6.28(1), p=.01, and X2=3.30(1), p=.05, respectively.

Conclusions: Sociodemographic factors were associated with readiness to quit, smoking patterns, and withdrawal symptoms in this underserved, primarily Black and Hispanic community sample. Age and related health concerns may have motivated older people to be more pro-active in reducing smoking while gender-related social values might have influenced women to be more moderate in their smoking as well as more motivated to seek support for quitting than men. Social and acculturation stresses might account for Hispanics reporting more psychological symptoms in their nicotine withdrawal than their non-Hispanic counterparts. Next steps will explore barriers and facilitators to adherence to smoking intervention.

112

The Effects of a Remote Diet and Exercise Intervention and Behavioral Change Constructs on Health Behaviors in the Prostate 8-II Randomized Controlled Trial

Chan JM, Wang L, Sanchez A, Macaire G, Roberts S, Graff RE, Zhang L, Winters-Stone KM, Cooperberg MR, Carroll PR, Van Blarigan EL, Kenfield SA

Purpose: We evaluated if diet or exercise habits changed in a randomized controlled trial (RCT) of a remote behavior intervention vs. control, in men with prostate cancer. We assessed associations of behavioral change constructs with health behaviors.

Methods: Prostate 8-II is a RCT testing a remote diet and exercise intervention among 202 men, diagnosed with prostate cancer, opting for surgery as primary treatment, and who were not meeting all exercise and diet recommendations. Enrollment is closed, follow up is ongoing. The intervention included - interactive website with education, goal setting, tracking, and rewards; text messages; and health coaching. Control arm received print education. We examined the effects of the diet intervention on the P8 diet score (higher=healthier), and the exercise intervention on meeting moderate to vigorous physical activity (MVPA) guidelines and the P8-II resistance exercise guidelines (2+ d/wk, 8 exercises/session) with mixed effects models (assessed via surveys at 0 & 12 months). We examined cross-sectional associations between baseline behavior constructs (social support, self-efficacy, perceived barriers, and use of change strategies) and baseline diet and exercise behaviors using multivariable linear and logistic regression.

Results: Among those with two-timepoint survey data, men randomized to the intervention (N~79) vs. control (N~83) increased their P8 diet score (p<0.001). A greater proportion of those randomized to exercise (N~91) vs. control (N~97) made improvements in meeting the resistance exercise recommendation (p=0.004); the exercise intervention did not improve MVPA between arms. At baseline, reporting more barriers was associated with lower step count (assessed via Actigraph GT3X+ accelerometers) and being less likely to meet MVPA guidelines; and use of change strategies was positively associated with MVPA guidelines. Higher self-efficacy for healthy eating was positively associated with P8 diet score.

Conclusions: The P8-II intervention increased the adoption of a prostate cancer-specific healthy diet and resistance exercise (vs. control). Future study will examine if changes in behavior were modified by behavioral constructs and evaluate the effect of the intervention on prostate-specific antigen levels

113-T

Associations of Single Nucleotide Polymorphisms and Aromatase Inhibitor Induced Musculoskeletal Syndrome: A Systemic Review and Meta-Analysis

Destin DD, McCall M, Schumacher FR, Thompson CL

Purpose: Aromatase Inhibitors (AIs) are standard treatment in the management of hormone receptor positive breast cancers in post-menopausal women. However, up to 50% of patients discontinue AI therapy due to musculoskeletal adverse events, collectively known as AI-Induced Musculoskeletal Syndrome (AIMSS). Multiple studies have sought to elucidate genetic factors associated with AIMSS, but there remains significant inconsistency in these findings. The aim of this study is to perform a systematic review and meta-analysis to better characterize the genetic factors underlying AIMSS.

Methods: A systematic review was performed in PubMed to identify epidemiological studies of SNPs associated with AIMSS. For each SNP with a statistically significant finding in one or more studies, we attempted to obtain summary statistics for that SNP from all available studies. Summary statistics were used to combine overlapping SNPs using an inverse-variance weighting approach to determine pooled odds/hazard ratios and statistical significance ($p<0.05$).

Results: Six studies were included in the final review: 4 candidate gene studies and 2 genome wide association studies (GWAS). 12 SNPs in 7 genes were identified as statistically significant in one or more study and included in the final analysis. Of these, 7 SNPs were tested in more than one study, with three statistically significantly associated with AIMSS risk after pooling (N=1,278). HSD17B2 variant rs11648233 was associated with increased risk of AIMSS (ORs = 1.33 [95% CI 1.04-1.70]). Minor alleles of TCL1A variants rs7158782, and rs7159713, in high linkage disequilibrium, were associated with slightly increased risk of musculoskeletal pain (ORs = 1.04 [1.00-1.07]). SNPs in RANKL, ESR1, SUPT20H and CCDC148 were significant in one study but not done in other studies.

Conclusions: These findings suggest that variants in HSD17B2 and TCL1A are associated with AIMSS in patients receiving AI therapy. There have only been two GWAS of AIMSS to date, with a combined sample size of 1,278 and primarily European ancestry (> 90%). The lack of diversity of participants in these studies, small samples, and inadequate replication suggests a strong need for additional studies to understand genetic factors associated with AIMSS

114-T

Fecal Sample Biobanking for Breast Cancer Disparities Research on the Gut Microbiome

Yaghjyan L, Goel N, Ratcliffe M, Forsyth S, Heine J, Egan KM

Breast cancer (BCa) remains the most common cancer diagnosis and second leading cause of cancer-related death among women. Despite advances in treatment, early detection and prevention are key to reducing BCa incidence. Some recent studies suggest that gut microbiome may represent an emerging potentially modifiable contributor to breast health, influencing key physiological functions related to BCa. To advance research in this area, we established a prospective biobanking study that focused on cancer-free women undergoing routine mammographic screening. Women were eligible for this study if they were 40 years or older, had no cancer history (other than non-melanoma skin) and did not use: i) oral/IV antibiotics within 30 days and/or; ii) more than two separate antibiotic regimens within the previous 3 months. Women were enrolled between February 2021 and June 2024 at imaging centers affiliated with 3 Florida-based institutions: University of Florida (Jacksonville); Moffitt Cancer Center (Tampa); and University of Miami (Miami). Study coordinators recruited women during scheduled mammography appointments. Women completed a detailed survey on BCa risk factors and underwent body measurements. Digital mammograms and stool/urine/saliva samples were also collected. Optionally, women also completed NIH's Diet History Questionnaire (DHQII) and a survey measuring residential stress. Mammographic breast density was assessed using established computerized assessment methods.We recruited a diverse sample of 733 cancer-free women (49% Caucasian, 21% African American, 26% Hispanic, and 4% women from mixed or other races), with an average age of 60 years (range 40-92). The majority (68.3%) were postmenopausal. BCa risk factor data collection was completed on 97% of women, with 58% and 65% also completing the diet and residential history questionnaires, respectively. Urine, saliva samples and mammograms were available for all women in the study and the stool samples were returned by 83% of participants. We have successfully established a diverse cohort of screen-aged women in Florida, with comprehensive BCa risk factor data, biospecimen collection, and mammographic breast density, providing a valuable resource for future BCa prevention research aimed at the gut microbiome.

115-T

Lower Consumption of Whole Grains is linked to Higher Gut Microbial Alpha-Diversity in Female Breast Cancer Survivors

Lu J, Little R, Anderson S, Rose J, Pol LV, Cooper MT, Schleicher EA, Motl R, Roughsedge VL, McGlawn S, Nyikos I, Oster R, Krontiras H, Lefkowitz E, Rogers LQ

Purpose: This study seeks to better understand variables such as diet quality that affect the gut microbiome in breast-cancer survivors.

Methods: This cross-sectional study involved nine non-Hispanic Black and 20 non-Hispanic White adult females with history of Stages 0-III breast cancer and completion of primary cancer treatment ≥1 year prior to study participation. Diet quality (Healthy-Eating-Index [HEI] with subscores) was assessed with 3-day diet records; alpha diversity was assessed by 16S rRNA sequencing of fecal samples. Participant characteristics were assessed by self-administered survey and BMI by remote assessment. Pearson correlations assessed associations between alpha-diversity and diet quality and relationships with subscores visualized using radar plots. Mann-Whitney U test compared relative abundance for top 10 genera by diet quality.

Results: Mean age for participants=55.3¬ffl8.8 years and mean BMI=29.6¬ffl8.3. 53.6% had Stage 0-I and 46.4% had Stage II-III breast cancer. Pearson correlational analyses revealed statistically significant correlations between Whole-Grains vs Observed Species (r=-0.439) and PD Whole Tree (r=-0.459). Similar results were observed when partial-correlation analysis was adjusted for age. Radar plots indicated that participants in the lowest tertile for Observed Species and PD-Whole-Tree had the highest HEI scores in 11/13 and 7/13 components, respectively. Follow-up comparisons of Top-10 genera revealed statistically significant difference in Akkermansia for whole-grains above vs below the median, with mean relative abundance= 8.84¬ffl10.18 vs. 3.26¬ffl5.26 respectively, p=0.03. Streptococcus also approached significance with mean relative abundance= 6.26¬ffl10.09 vs. 1.96¬ffl4.26 respectively, p=0.05.

Conclusion: Higher diet quality was generally linked to lower gut microbial diversity in female breast-cancer survivors. Further research is needed in larger sample sizes to determine whether Akkermansia or Streptococcus increases in response to a greater intake of whole grains contribute to this finding.

116

A Pilot RCT of Two Remotely Monitored Exercise Interventions in Breast Cancer Patients Receiving Chemotherapy

Helms CE, Krukowski RA, Weeldreyer NR, Day K, Glick J, Ellison CC, Mabalot MB, Millard T, Dillon PM, Brenin CM, Angadi SS, Zoellner JM

Purpose: This pilot RCT evaluated the feasibility (i.e., recruitment, engagement, retention) and acceptability of two remotely monitored exercise interventions, a high-intensity interval training intervention (HIIT) compared to a brisk walking intervention (BW), in patients with breast cancer receiving chemotherapy.

Methods: Both interventions were guided by Social Cognitive Theory and included two supervised exercise sessions, unsupervised home exercise sessions with Polar watch tracking, personalized short message services (SMS), and stepped care problem solving for participants who did not meet weekly exercise goals. Intervention acceptability was assessed with 34 questions (grouped into 6 subscales; rated on a 5-point Likert scale). Descriptive statistics summarized findings; unpaired t-tests explored differences between conditions.

Results: Of 94 eligible patients, 24 (25%) enrolled and 12 participants were randomized to each condition. Of the 70 eligible non-enrollees, the primary reason for refusal was traveling/scheduling. In HIIT and BW groups, 7/12 (58%) and 8/12 (67%) completed the intervention, respectively. Attrition was attributed to screen failure (n=2), chemotherapy-related side effects/complications (n=3), lack of time (n=1), and (unknown) lost to follow-up (n=4). Attendance at supervised exercise sessions was 92% for HIIT and 75% for BW. Weekly exercise adherence was similar among conditions: HIIT = 37% met goal, 21% some progress, 32% no progress, and 10% device error; BW = 37% met goal, 28% some progress, 20% no progress, and 15% device error. In both conditions, SMS responses revealed that chemotherapy-related side effects were the largest barrier to meeting exercise goals. The average number of stepped care sessions per participant was 2.0 (HIIT) and 1.8 (BW), of which 55% and 81% were completed. Intervention acceptability was high, with no significant between group differences (p>0.05).

Conclusions: Both remotely monitored exercise interventions were acceptable to patients; the feasibility data will help inform a future full-scale trial. Additional research is needed to address the influence and management of chemotherapy side-effects in exercise interventions in efforts to help patients remain active during their treatments.

117

Analysis of Young Women's Spontaneous Reactions to Health Warning Messages about Alcohol Consumption and Increased Breast Cancer Risk

Anbari, AB, Massey, Z, Olajire, A, Wang, N, Lawrie, L, Martinez, P, & McCarthy, D

Purpose: Alcohol consumption increases breast cancer risk. We evaluated the spontaneous reactions of female participants ages 21 to 29 to health warning messages addressing the relationship between alcohol consumption and increased breast cancer risk.

Methods: In an online experiment, participants were randomly assigned to view standalone health warning messages describing alcohol consumption and the increased risk for breast cancer health effects (mortality, mastectomy, or hair loss) or a non-health control message. Participants were randomly assigned to view pictorial or text-only attributes in warnings within each condition. Participants completed post-message exposure assessments, including an open-ended textbox where they were encouraged to type spontaneous reactions to the messages. We conducted a content analysis of the responses from participants who viewed the health warning messages (n=748). Code labels were derived from the constructs and categories within the message impact framework (MIF): message reactions, attitudes and beliefs, and behavioral intention. Responses were assessed for the presence of these constructs and categories.

Results: The number of responses corresponding to the MIF constructs and categories did not vary by participants' age, race, ethnicity, income, education, or drinking history. Likewise, we did not identify differences in the type of responses based on health effects described in the warnings. For example, participants viewing mortality warning messages did not respond differently from those viewing mastectomy warning messages. We identified the need to add a subcode of message reactions, called "new information" which was found in 20% of the responses, indicating those participants had no prior knowledge of alcohol consumption and breast cancer risk.

Conclusions: Exposure to messages alcohol consumption and breast cancer risk prompted participants to respond in ways that corresponded to the MIF, suggesting that our health warning messages were well-designed. Emergence of the new information code potentially extends the MIF framework. Given the frequency participants admitted to not knowing about alcohol consumption and breast cancer risk, more work in cancer prevention and population health messaging is warranted.

118-T

Assessment of the Content and Readability of Reminder Templates Used by US Lung Cancer Screening Programs

Hirsch EA, Fathi JT, Ciupek A, Carter-Bawa L

Purpose: With low adherence to lung cancer screening (LCS) guidelines, clinical reminder messages provide an important opportunity to engage with LCS participants about the impact of continued participation. This exploratory study aimed to understand the content and reading level of reminder templates used in LCS programs.

Methods: LCS navigators were asked to voluntarily upload reminder message templates after completing a survey focused on LCS adherence and reminder processes. Reminder templates were transcribed into a clean Word document with all identifying information removed. Using a data extraction guide, we systemically collected information on reminder purpose, logistical support, educational aspects, and LCS-related benefits and risks. Readability of each template was assessed with the validated Flesch-Kincaid grade level assessment tool.

Results: 20 unique templates were uploaded for 11 LCS programs, including 10 annual reminders, 6 interval reminders, and 4 letters for ordering clinicians. Content for all annual templates focused on reminding individuals that they needed to schedule their yearly CT, whereas 40% of interval and 50% of clinician reminders were sent when the test was overdue. All templates contained information about how to schedule the exam, with instructions to talk with the ordering clinician included in 20% of annual reminders to confirm eligibility and 67% of interval letters to discuss recommended follow-up. Educational aspects were mentioned in most (70%) of annual reminders, but only included in 17% of interval letters. The most mentioned educational components included the benefit of annual LCS being the best way to diagnose early disease, lung cancer symptoms, and the importance of smoking cessation. The median (IQR) grade reading level score of the participant reminders were 8.3 (6.9-9.5) and 8.9 (8.4-9.1) for the annual and interval templates, respectively. Only one template was written below a 6th-grade reading level recommended by the American Medical Association.

Implications: While most LCS programs use annual reminders to communicate educational information, these findings suggest that programs should audit the readability of reminder templates since many adults in the US have lower health literacy.

119

Broadband Access and Satisfaction with At-Home Internet Quality is Associated with Cancer Information Seeking Experiences Among U.S. Adults in the NCI Health Information National Trends Survey, 2022

D'Angelo H, Blake KD, Moser RP, Rincon M, Vanderpool R

Purpose: To examine whether perceived internet access quality is associated with cancer information-seeking (CIS) and cancer information seeking experiences (cISEE) among US adults.

Methods: Data were from NCI's Health Information National Trends Survey (HINTS 6; 2022, n=6067 US adults). Internet access and satisfaction with at-home internet connection items were combined: no broadband access(no internet use or dial-up only), perceived low-quality broadband (any broadband with low satisfaction), and perceived high-quality broadband (any broadband with high satisfaction). Dependent variables were CIS (ever looked for cancer information, yes/no) and cISEE (mean of 4 items transformed to a 0-100 scale: took a lot of effort; felt frustrated; information quality concern; hard to understand). Higher cISEE scores indicate better cISEE. Bivariate statistics compared internet access quality and CIS by cancer history. Survey weighted logistic and linear regression models examined associations between internet access quality and dependent variables. Covariates were personal and family cancer history, age, sex, race, ethnicity, education, income, and urbanicity.

Results: Having no broadband access was reported by 17.4% of cancer survivors and 14.9% of adults without cancer history. Over 70% of survivors and 40.2% of adults with no cancer history reported CIS. But among those with no broadband access, CIS dropped to 40.8% of survivors and 19.9% of those with no cancer history. Low (aOR 2.5, 95%CI [1.9, 3.3]) and high-quality broadband access (aOR 2.7 , 95%CI [2.1, 3.5]) were associated nearly 3 times greater odds of CIS compared with those having no broadband access. Among those reporting CIS (n=2765), high quality broadband (vs. no broadband) was associated with an 11.8-point greater cISEE score (p=0.001).

Conclusions: Lacking broadband may be a barrier to CIS given that higher quality broadband was associated with both CIS and better CIS experiences, including less confusion and frustration. Reducing the digital divide as a barrier to cancer information access and positive CIS experiences is critical, given previous evidence that CIS is associated with greater cancer-related awareness, preventive behaviors, and better psychosocial outcomes among survivors.

120-T

Comparing Risk Factors Between Earlier and Later-Onset Colorectal Cancers: A Case-Case Comparison

Rees S, Pearlman R, Paskett ED, Shields PG, Hampel H, Freudenheim JL

Purpose: Early-onset colorectal cancer (EOCRC) is increasingly prevalent. It is critically important that we gain a better understanding of its etiology to inform prevention. We compared risk factors for EOCRC to later-onset colorectal cancers (LOCRC).

Methods: This case-case comparison utilized data from the Ohio Colorectal Cancer Prevention Initiative (OCCPI), a multi-center population-based study conducted 2013-2016. The OCCPI participants were Ohio residents with newly diagnosed, primary colorectal cancer. Risk factors that were previously found to be associated with colorectal cancers or considered early-life exposures were examined. EOCRC cases were defined as those with age at first-primary colorectal cancer diagnosis < age 50 and LOCRC as those diagnosed > age 50 (N=1,306). Descriptive statistics were calculated for each risk factor by age-at-diagnosis. Logistic regression models were used to estimate odds ratios (OR), and 95% confidence intervals (CI) for models comparing the patients based on age at diagnosis. Confounding was assessed for each association and model-specific adjustments were made.

Results: In multivariable models, EOCRC cases had statistically higher odds of having Lynch syndrome (OR=4.23, CI: 2.53-7.05), to have symptoms before diagnosis (OR=6.03, CI: 3.74-9.74), to ever have consumed alcohol (OR=2.50, CI: 1.57-3.96), and to have consumed more alcohol in their teens/twenties than in the rest of their lives (OR=1.84, CI: 1.3-2.49). Birth weight, IBD or IBS status, sex, race, and body mass index did not differ between EOCRCs and LOCRCs. Certain colorectal symptoms were more likely to be reported by EOCRCs including blood in stool (52.3 vs. 30.7%), change in bowel habits (37.2 vs. 19.8%) and bowel obstruction (13.9 vs. 7.7%). In a sensitivity analysis, cases <40 years old were more likely to have a birthweight < 6lbs (14.5 vs. 7.7%) compared to those older than 65.

Conclusions and Relevance: The reporting of CRC symptoms, alcohol consumption, and alcohol consumption in early-life, were more associated with EOCRC than LOCRC. These risk factors may inform targeted screening for colorectal cancer among younger individuals.

121

Developing a Patient Navigation Intervention to Decrease Barriers to High-Risk Breast Cancer Management Care

Courtni M. Montgomery, EQ Victory, Rachel J. Meadows, Hayley Cassingham, Wilson Figueroa, Bushra Siddiqi, Electra D. Paskett, Tasleem J. Padamsee

Purpose: To develop a patient navigation (PN) intervention that will inform, educate, and facilitate risk management among high-risk breast cancer (BC) patients.

Methods: A total of 31 non-Hispanic (17 White and 14 Black) high-risk women were interviewed about their preferences for supportive and informational content that could be provided by patient navigators (PNs). Each interview was coded by two coders using a template that encompassed both deductively and inductively generated thematic codes. Findings from these data were used to generate intervention materials. Scientific experts and patient representatives provided feedback on these materials and insights from this expert feedback were used to revise and finalize the PN intervention.

Results: The resulting intervention will promote risk management among high-risk women by addressing key factors that have been found to facilitate risk management during prior research by our team. Materials developed to guide the work of PNs include: (1) a slide deck for PN Training, (2) a Guide to PN interactions with high-risk women, (3) a Reference Manual containing evidence-based topics and questions PNs can use to support these patients, and (4) lists of Relevant Resources PNs can access online to locate deeper information and resources pertaining to each topic in the Reference Manual. A data tracking system has also been developed in REDCap to manage and record PN interactions with participants through 8 months of repeated contact.

Conclusions: This work has utilized input from high-risk women and scientific experts to develop and refine the first known patient-facing intervention designed specifically for use with women at high risk of breast cancer. By targeting the key facilitators of risk-management adoption as an integrated suite, this intervention will help ensure that high-risk women have information, support, and healthcare access appropriate to coping with their cancer risks. Next steps in this research agenda include a pilot study to establish feasibility of the intervention and associated resource needs, to be followed by a larger scale trial of effectiveness.

122-T

Exploring Lung Cancer Screening Engagement Strategies with Rural Primary Care Clinicians

Liang I, Hirsch EA, Hoover K, Nederveld AL, Huebschmann A, Thomas N, Glasgow RE, Studts JL

Purpose: Despite being evidence-based, guideline recommended, and policy supported, lung cancer screening (LCS) remains starkly underutilized. Primary care clinicians play a central role in the LCS implementation process but experience significant barriers and receive minimal support to deliver LCS. This study aims to understand how rural-serving primary care clinicians wish to be engaged to facilitate LCS implementation.

Methods: Rural-serving primary care clinicians were recruited to participate in a multi-method study using key informant interviews and brief surveys. Interviews addressed educational and engagement needs and preferences, while surveys collected demographic data, training history, and LCS perspectives. Survey data were analyzed descriptively. Interviews were inductively analyzed by 3 researchers using qualitative description to identify themes.

Results: Seven physicians and two advance practice nurses(N=9) from Colorado and North Carolina were interviewed in 2022. All worked in family medicine and most had individual independent practices (57%). Five themes emerged from the data. First, LCS' relative newness was a challenge as it was less likely to be discussed during visits. Second, clinicians recognized the need for training and better systems to identify and support eligible patients. Third, while implementing guidelines was simple and feasible, challenges remained concerning follow-up procedures and insurance coverage questions. Fourth, clinicians emphasized the value of collaborative learning to facilitate efficient and effective LCS implementation. Fifth, clinicians favored online or asynchronous continuing education to accommodate time constraints.

Conclusion: Engagement preferences for education on LCS were similar to traditional continuing education approaches, with emphases on accessibility, collaboration, and flexibility. Beyond education alone, optimal LCS implementation requires better systems to support rural primary care efforts to sustain routine LCS. These data will guide development of LCS clinician training, engagement and support strategies to reduce the lung cancer burden experienced by individuals in rural regions and will inform development of conjoint surveys assessing primary care preferences for LCS engagement.

123-T

Factors Associated with Cancer Patients' Self-Efficacy for Communicating Secondary Germline Findings from Tumor Genomic Profiling to Close Others

Salafia C, Hay JL, Stadler ZK, Offit K, Robson ME, Hamilton JG

Tumor genomic profiling (TGP) can reveal incidental secondary germline findings (SGF) regarding cancer patients' inherited risks for cancer and other conditions. These SGF should be shared with family members, as they may reveal information about their cancer risks. Yet communicating SGF to others is complex due to psychological and practical barriers, and little is known about the level of self-efficacy patients may have in communicating these results. This cross-sectional analysis is part of a larger study of advanced cancer patients undergoing TGP. We aimed to identify potential correlates of self-efficacy for communicating SGF after patients received their results, including SGF result (positive versus negative), concerns about genetic testing, perceived utility of SGF (3 subscales of perceived utility for self, for others, and confidence in SGF), knowledge about TGP and SGF, anxiety, depression, and anticipated familial response to SGF. We examined associations between sociodemographics (age, income, race, education, sex, health status) and self-efficacy to identify potential correlates. Descriptive statistics and multivariable linear regression with forward stepwise selection (based on variables significantly correlated with self-efficacy) were conducted. Participants (N=116; 52% female, M age=58.28, SD=12.72, 18% with positive SGF) reported relatively high self-efficacy (M=21.48, SD=4.85, range 12-28). Only health status was associated with self-efficacy and included as a covariate in the stepwise regression. Significant correlates of self-efficacy included better health status (β=0.22, p=.01), greater perceived utility of SGF for others (β=0.19, p=.03), lower concerns about genetic testing (β= -0.19, p=.04), and lower knowledge about TGP and SGF (β= -0.21, p=.02). With growing use of TGP, patients will be tasked with communicating SGF to others. The association of lower knowledge with greater self-efficacy warrants future investigation but may indicate that when individuals are more aware of the nuances of TGP and SGF, they display lower confidence in communicating these complex results to others. Interventions to improve self-efficacy may help support individuals in disclosing their findings and ideally promote cancer prevention among others.

124-T

Factors Associated with Patient Refusals for Lung Cancer Screening Referrals at a New York City-Based Cancer Center: A Qualitative Exploration

Min D, Yusuf Y, Foster V, Braithwaite KA, Cherry-Georges P, Morgan M, Haseltine M, Mercado J, Chachoua A, Sterman D, Lee M

Background: Lung cancer is the leading cause of cancer death in the United States (US) and globally. Timely lung cancer screening can reduce lung cancer mortality but is still underutilized. NYU Langone's Laura and Isaac Perlmutter Cancer Center (PCC) is a National Cancer Institute (NCI)-designated Comprehensive Cancer Center and has been part of the NCI Early Detection Research Network since 2000. PCC is home to the NYU Langone Lung Cancer Screening Program, which offers lung cancer screening for patients at risk for developing lung cancer.

Purpose: To qualitatively explore and understand factors associated with patients who refuse lung cancer screening referrals at the NYU Langone Lung Cancer Screening Program at PCC.

Methods: Semi-structured individual interviews were conducted among referred patients (n=7) and referring providers (n=4) for lung cancer screening to assess experiences, barriers, and facilitators. Two focus groups were also conducted with the Lung Cancer Screening Program staff (n=3) at two time points to understand processes and workflows. Interviews and focus groups were audio-recorded and transcribed verbatim. Findings were identified through thematic content analysis.

Results: Preliminary findings include the following major multi-level themes: 1) Patient-Level and Staff-Level Facilitators—e.g., trust in provider recommendations, health insurance coverage for screening, and accessibility of the lung cancer screening appointment; 2) Patient-Level Barriers—e.g., inadequate lung cancer screening information from providers; and 3) Future recommendations to improve the reach and impact of the Lung Cancer Screening Program—e.g., the need for linguistically- and geographically-tailored materials, clear messages from providers, highlighting stories from lung cancer patients, and outreach through provider or community leaders. One provider also recommended the need for improved care coordination following referrals.

Conclusions: Findings indicate opportunities to improve lung cancer screening uptake through leveraging provider trust as well as improving shared decision-making practices between providers, staff, and patients.

125-T

Gynecological Symptoms and Their Role in Shaping Cervical Cancer Awareness, Vaccination, and Screening: A Large-Scale Cross-Sectional Survey

Sankuru Daniel Finney, Sunkavalli Chinnababu, Lakshmi Harish Neelamraju, Dasari Sumedha Sahana Sree, Dulipala Phanindra, Kamunuri Ravi Kiran, Anthony Vipin Das

Purpose: This study aims to assess the association between gynecological symptoms (abnormal menstruation and pelvic pain) and cervical cancer awareness, as well as preventive practices (screening and HPV vaccination uptake), among women of reproductive age.

Methods: This cross-sectional study at Vignan University, Guntur, during the Guinness World Records event for the Largest Cervical Cancer Awareness Lesson on March 18, 2023, included 3,157 women aged 15-49. Data were collected through convenience sampling via a pre-tested questionnaire on socio-demographics, cervical cancer awareness, and preventive practices. Ethical clearance and informed consent were obtained. Participants were categorized into high- and low-awareness groups based on questionnaire responses. Data analysis was conducted using SPSS v.20, with chi-square tests to assess associations between gynecological symptoms (abnormal menstruation and pelvic pain) and cervical cancer awareness, screening, and HPV vaccination.

Results: Most participants were young women, with 90.3% (2,850) aged 15-24. Educational levels included 53.8% with B.Tech degrees, 19.3% with general degrees, 12.1% postgraduates, 3.8% M.B.B.S. graduates, and 3.4% were illiterate. Socioeconomic status was fairly distributed, with 23% upper class and around 20% in each of the other classes. Of the 3,157 participants, 712 (22.5%) reported abnormal menstruation. Women with abnormal menstruation had higher cervical cancer awareness (62.7%), HPV vaccination (10.5%), and screening (11%) than those with normal menstruation, with significant associations for awareness (p=0.0001), vaccination (p=0.03), and screening (p=0.02). Participants with pelvic pain had higher vaccination (10.1%) and screening rates (10.8%) than those without (p=0.001 and p=0.0001, respectively), but awareness differences were not significant.

Conclusion: Women with gynecological symptoms, such as abnormal menstruation and pelvic pain, have higher cervical cancer awareness and engage more in preventive behaviors like HPV vaccination and screening. This underscores the necessity for targeted educational programs that utilize symptomatology as a potential motivator for preventive health measures, ultimately enhancing women's health outcomes.

126

Health Literacy and Receipt of Cancer Screening

Hussein AI, Awamlh B, An A, Morley F, Nanus DM, Tamimi RM, Kensler KH

Purpose: Health literacy reflects the ability to find, understand, and use health information, which may affect uptake of cancer screening and subsequent cancer outcomes.

Methods: We identified cohorts of individuals eligible to undergo screening for breast (n=70,031), cervical (n=85,435), colorectal (n=162,467), lung (n=7,919), or prostate cancer (n=25,327) per U.S. Preventive Services Task Force (USPSTF) guidelines within the All of Us Research Program Controlled Tier V7 data release (2017-2022). Health literacy was self-reported by participants using the 3-item Brief Health Literacy Screen (range 3-15), with a score of <10 signifying low health literacy. Adherence to USPSTF cancer screening recommendations was ascertained using linked participant electronic health record data. Adjusted odds ratios (aOR) were estimated for the association between health literacy and adherence to cancer screening guidelines, adjusting for participant sociodemographic characteristics and other determinants of healthcare access and utilization.

Results: The prevalence of low health literacy ranged from 8% (cervical) to 16% (prostate) across screening-eligible cohorts. Younger participants and male participants were more likely to report low health literacy, as were participants with lower annual income, who were out of work or unable to work, and those with Medicaid insurance. Proportions receiving guideline-concordant cancer screening were lower among individuals with low health literacy for each of breast (24% vs 36%), cervical (16% vs 23%), colorectal (30% vs 38%), lung (4% vs 9%), and prostate cancer (16% vs 28%). Low health literacy was associated with lower receipt of cancer screening for breast (aOR=0.86, 95%CI 0.81-0.92), colorectal (aOR=0.88, 95% CI 0.85-0.92), lung (aOR=0.58, 95%CI 0.41-0.81), and prostate cancer (aOR=0.89, 95%CI 0.80-0.98), but not for cervical cancer (aOR=1.00, 95% CI 0.93-1.07).

Conclusions: Individuals with lower health literacy were less likely to meet cancer screening guidelines, which may contribute to disparities in the early detection of cancer for underserved populations. These findings underscore the need to develop public health messaging strategies that are more attuned to health literacy when addressing inequities in cancer screening.

127

HPV Vaccine Misperceptions Among Pediatric Frontline Clinical Staff in California

A Mentado, O Keleman, L Nguyen, J Moody,
C McDaniels-Davidson

Purpose: To assess whether personal, training, and practice factors were associated with HPV vaccine misperceptions among Medical Assistants (MA) and Licensed Vocational Nurses (LVN) in pediatric settings. Given their role in pediatric immunization, this could be an important workforce to engage as we strive to increase HPV vaccine uptake.

Methods: California clinical office staff with direct pediatric clinical contact were recruited to complete a 50-item online survey (August-October 2024) related to HPV vaccination. Respondents received a $30 gift card incentive. Survey Items included sociodemographics, training, supervision, and a validated scale of HPV vaccine misperceptions (possible range 0-36; higher scores indicate greater misperceptions). ANOVA and t-tests were used to test for associations between HPV vaccine misperceptions and personal and practice factors.

Results: A diverse group of LVNs and MAs (n=245; mean age 34.9¬ffl10.6 years) completed the survey; 63% identified as Hispanic, 18% as non-Hispanic White, 9% as Asian or Pacific Islander, 3% as American Indian, and 7% as another race/ethnicity; two-thirds were fluent in a language other than English. Most (87%) were MAs and 54% worked in family medicine (versus pediatric) settings. Most (43%) worked in safety net settings; 32% worked in private practice and 25% in health systems. Nearly half (49%) had a clinical supervisor with prescribing ability and more than half (52%) reported having had formal HPV vaccine training. Mean HPV Vaccine Misperception Sum Score was 10.6¬ffl5.5. No differences in HPV Vaccine Misperception sum score were observed by level of clinical supervisor, role of respondent, practice type or setting, or training. Respondents fluent in a language other than English had greater misperceptions (mean 11.3) than those that were monolingual (mean 9.2; p<.001).

Conclusion: An intervention to address misperceptions with this critical workforce is broadly applicable across personal and practice factors. Greater misperceptions among those fluent in a language other than English could suggest that interventions should be offered in the primary language of the MA/LVNs. Addressing misperceptions empower this critical and diverse workforce to become HPV vaccine champions within their offices.

128

Impact of Digital Health Tool Engagement for Clinical Trials: Preliminary Results of mychoice Implementation Study

Fleisher L, Landau Z, Kenny C, Bass S, Lachow K,
Harrington N, Edelman M, Judd J

Purpose: The mychoice™ Implementation Study aims to evaluate the 1) feasibility and acceptability of delivering an evidence-based clinical trial preparatory tool to all new medical oncology patients and 2) to understand the effectiveness of the tool to empower patients to engage in discussions with their providers about their treatment options.

Methods: From February 1 to September 30, 2024, 4,352 patients received the decision-making tool via text or email, resulting in 8,500 views. For the effectiveness trial, 504 patients were contacted and 63% could not be reached (after 3 calls). Of those reached, 38% consented (N=71 to date) consented to baseline, one-month and four-month surveys, a two-month interview and a 6-month chart review.

Demographics: This preliminary analysis includes 49 participants who completed both baseline and one-month follow-up surveys. The majority were women (57.1%) and White (73.5%), followed by Black or African American (20.4%), Asian (2.0%), and individuals of more than one race (4.1%). Most (90.9%) identified as non-Hispanic. Over half (55.1%) had Medicare or Medicaid, and 37.5% reported an income of $75,000 or more. All participants graduated from high school, with 83.7% of participants attaining some level of higher education. The median age was 67, and 73.5% of participants are over the age of 60.

Results: At one-month follow-up, participants reported feeling adequately prepared to make a decision using mychoiceTM (Œº = 70.98, SD = 18.27). Participants reported satisfaction with the tool (Ottawa Preparation for Decision Making Scale Œº = 67.16, SD = 22.19), but reported higher satisfaction with the tool in helping them to make a decision overall (Œº = 94.91, SD = 8.01). Participants reported a slightly higher intention to participate in clinical trials from baseline to one-month as a result of using mychoiceTM, though current follow-up data does not show a significant relationship (p = 0.13).

Conclusion: Delivering digital health tools via EMR driven data directly to patients is both feasible and acceptable to this diverse patient population, even in an older population. Preliminary analysis suggests high user satisfaction for decision making and strong promise of increasing patient intent to enroll in clinical trials.

129

Interim Analysis of a Pragmatic Stepped Wedge Cluster Randomized Clinical Trial Evaluating Behavioral Economics-Informed Implementation Strategies to Increase Supplemental Breast MRI Screening among Patients with Extremely Dense Breasts

McCarthy AM, Mack E, Perez Rojas N, Blumenthal D, Krikorian A, Conant EF, Guerra CE, McDonald ES, Nunes LW, Rendle KA, Ware S, Wheeler BC, Beidas RS, Bekelman JE, & Schnoll R

Purpose: This pragmatic trial assesses whether sending behavioral economics-informed messages ("nudges") to patients and clinicians increases supplemental breast MRI engagement for patients with extremely dense breasts in a state mandating insurance coverage of supplemental screening.

Methods: Patients with extremely dense breasts identified on non-actionable mammograms from 33 clinics were randomized to receive a text message promoting supplemental breast MRI or usual care. Clinician nudges were embedded in mammogram reports or sent via in-basket messages. Clinic groups were randomized to clinician nudge activation in a stepped wedge design to reduce contamination and account for time trends. The primary outcome is breast MRI ordering and/or scheduling in six months. We also qualitatively analyzed patient portal messages to uncover barriers and facilitators to MRI engagement.

Results: From October 2023 to October 2024, 1,358 patients were enrolled. So far, 803 have completed six-month follow-up. Of these patients, 506 identified as White, 138 as Black, and 159 as another race. Text message opt-outs and nudge receipt were similar across racial groups. MRI was ordered for 258 (32%) patients who finished follow-up, with higher rates for White patients (37.8%) than Black (21.7%) or other patients (23.3%). Scheduling (26.3% vs. 13.8% vs. 15.7%) and receipt (22.1% vs. 10.1% vs. 13.8%) also differed by race. Screening ultrasound was ordered for 49 (6.1%) patients, scheduled for 29 (3.6%), and received by 16 (2.0%). Finally, we reviewed 369 patient portal messages for 123 patients. Despite new laws, insurance was the most common barrier, followed by cost and claustrophobia. Clinicians' message framing varied, with some encouraging MRI and others noting it without giving an opinion, but patient MRI receipt did not differ based on clinician tone (64.0% vs. 63.0%).

Conclusions: Interim findings show higher MRI engagement for women with extremely dense breasts versus historical baseline (7.7%). We observed racial disparities in MRI ordering, scheduling, and receipt. It seems feasible and acceptable to implement nudges promoting breast MRI to patients and clinicians. When all patients complete follow-up, we will determine the nudges' efficacy at increasing MRI engagement.

130-T

Leveraging AI For Content Analysis To Capture Arabic Cancer Prevention Content On TikTok

Komsany A, Al Zoubi O, Elkefi S, Harrison G, Scales D, Chebli P

Purpose: We led a content analysis of Arabic TikTok videos on cancer prevention to evaluate the quality of health information younger demographics encounter.

Methods: The research team compiled and expanded a cancer prevention keyword list with assistance from a large language model (GPT-4) to identify relevant TikTok videos (2021-2024). Using the TikTok Research Application Program Interface, we scraped 1,800 videos. Audio-to-text transcription was automated using an AI model specialized in Arabic. After removing duplicates and irrelevant content, we extracted data on engagement metrics, uploader type, cancer type, target demographics, tone, and evidence-based content. We evaluated video quality using the Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT) for understandability and actionability and the Global Quality Score (GQS) for overall content quality. As an exploratory aim, we used iterative prompt engineering from Arabic text to generate structured output and compared manual versus AI-generated annotations on cancer type for 20% of the videos.

Results: The final dataset included 320 TikTok videos, with over 23 million views, 500,000 likes, and 170,000 shares. Analysis of the top 25% of videos with highest engagement revealed 10.3% were evidence-based and 24.1% used a casual tone. The most common content was diet and alternative therapies (34.5%), followed by chemical carcinogens (3.4%) and smoking cessation (3.4%). The most frequently mentioned cancers were general cancer (37.9%), breast cancer (17.2%), and cervical cancer (13.8%). Most videos featured doctors (53.3%) and a third (34.5%) targeted the general public. Most videos scored low on PEMAT understandability (75.9%) and high on PEMAT actionability (65.5%). Content quality had a mean GQS score of 3.6, with a portion (31%) of lower-quality content (GQS 1-2) showing higher engagement rates. There was substantial agreement in cancer type between human and AI annotations (Œ∫ = 0.79). Conclusion: As the Arab American population grows in the US, understanding their engagement with TikTok health content is crucial. This study highlights AI's strong performance in analyzing Arabic content and underscores the need to counter unreliable health communication on TikTok.

131

Mothers’ Preferences and Values for Sharing Cancer Risk Assessment Information with Children

Statman MR, Sleiman, Jr MM, Peshkin B, Hamilton J, Isaacs C, Tercyak KP

Purpose: High-risk parents’ (e.g., BRCA mutation carriers) openness to sharing cancer risk assessment (CRA) information with their adolescent and young adult (AYA) children may depend on their preferences and values. Our study explored these and related constructs to guide genetic counseling for high-risk families with AYA children.

Methods: High risk-mothers (N=273) of AYAs reported on their attitudes toward pediatric genetic counseling and testing for cancer predisposition, the importance they place on open communication, and the benefits/risks of communicating CRA information with children. Univariate and bivariate associations were examined to construct a multivariable model of CRA information-sharing’s risks/benefits to children.

Results: Among mothers (48% breast-ovarian cancer survivors), 66% had informed their AYAs about their own participation in CRA. Regarding AYA CRA, mothers placed high value on open parent-child cancer communication (M=17.7/20; SD=3.5) and the benefits that sharing BRCA test results with children have (e.g., promoting trust; M=26.3/30;SD=4.9). Mothers placed less value on the risks of sharing such information (e.g., worry, anxiety) (M=28.0/50; SD=13.8; t=15.8, df=263, p<0.001). Mothers who valued the benefits of sharing CRA information were more supportive of pediatric genetic testing (r=0.2, p<0.001) and open parent-child communication (r=0.5, p<0.001). Those perceiving greater benefits in sharing CRA information with AYAs were also more likely to inform AYAs about maternal CRA (r=0.09, p=0.07), after controlling for perceptions of its risks. In a multivariate model adjusted for maternal values about CRA information risks (B=0.2, SE=0.03, p<0.001), those supporting pediatric genetic testing recognized the benefits of CRA information-sharing (B=0.04, SE=0.01, p<0.001).

Conclusions: Mothers who recognize the benefits of sharing CRA information with their children tend to hold more positive attitudes toward pediatric genetic testing for cancer predisposition. Addressing high-risk parents’ preferences and values for communicating about CRA with their AYA children can foster intergenerational dialogue about hereditary cancer control, and when supported by genetic counseling.

132-T

Perceived Message Effectiveness of Cervical Cancer Screening Messages: An Online Experiment

Halvorson-Fried SM, Higgins ICA*, Gilkey MB, Lazard AJ, & Hall MG (*co-first authors)*

Purpose: Cervical cancer is almost entirely preventable through vaccination and screening, but disparities in screening rates persist. Communication campaigns can encourage screening; however, the type of message content that works for cervical cancer screening is unknown. We aimed to test message themes to improve cervical cancer screening rates.

Methods: We conducted a mixed-effects online randomized experiment on cervical cancer screening messages. First, we created messages for four themes: cancer fatalism, convenience, risk factors, and screening guidelines. A national convenience sample of participants aged 21-65 and assigned female at birth (n = 1,536) viewed (in random order) one of three possible messages from each theme and one control message. The primary outcome was perceived effectiveness of the message to encourage cervical cancer screening, a measure that is predictive of behavior change. Secondary outcomes included two potential mechanisms for behavior change: anticipated social interactions and self-reported learning. Mixed-effects linear models examined the associations between message theme and each outcome on a scale from 1 (low) to 5 (high).

Results: All message themes encouraged cervical cancer screening more than the control message (mean perceived message effectiveness = 3.44 for cancer fatalism, 3.43 for convenience, 3.25 for risk factors, 3.44 for screening guidelines, and 2.45 for the control message, p<.001). All message themes led to higher anticipated social interactions than the control (mean = 2.62 for cancer fatalism, 2.60 for convenience, 2.52 for risk factors, 2.63 for screening guidelines, and 2.06 for the control, p<.001). Self-reported learning was also higher for all message themes (mean = 2.57 for cancer fatalism, 2.53 for convenience, 2.69 for risk factors, 2.92 for screening guidelines, and 1.96 for the control, p<.001).

Conclusions: Messages within a variety of themes were perceived as more effective at encouraging cervical cancer screening than a control message; in addition, these messages elicited higher anticipated social interactions and self-reported learning than the control. These findings suggest that several messaging strategies have the potential to increase cervical cancer screening rates.

133

Perinatal Depression and Women's Sun Safety Behaviors: Results of a Pilot Intervention Trial

Anwar OU, Wu YP, Mendoza JM, Statman MR, Tanguy WJ, Sleiman Jr. MM, Grossman D, Theilen LH, Tercyak KP

Purpose: Behavioral counseling may help pregnant women curtail their UVR exposure-a carcinogen elevating skin cancer risk and harming fetal development. Depression affects up to 40% of pregnancies and may undermine sun safety adherence. This study examines perinatal sun safety behavior and co-occurring depression.

Methods: In a single-arm trial of a theoretically-guided sun safety intervention for pregnant women, participants completed a baseline (BL) survey and depression screener (PHQ-2) during the 2nd or 3rd trimester. They underwent peer coaching for up to 2x30-min sessions to discuss maternal-infant sun safety (e.g., sunscreen and hat use): a cutoff score identified those who were likely depressed prepartum. Follow-up surveys were given 1- and 3-months postpartum (F1, F2). Differences in pre- and postpartum sun safety and depression were evaluated using t-tests, and their main and interactive effects were tested using a multivariable model adjusted for covariates.

Results: Among N=58 pregnant women (17.2% non-white, 17.2% Latine), the M sun safety score at BL was 23.2/32 (SD=4.4) and 34.5% were identified as likely depressed: participants who were above the depression cut-off had lower sun safety scores at this time point (t=1.8, df=56, p<.05). At F1, the M sun safety score rose to 26.5 (SD=4.8), and 26.9 (SD=5.2) at F2. In paired analyses x time, sun safety's increases from BL to F1 (t=5.8, df=57, p<.001) and F2 (t=5.7, df=57, p<.001) were significant. When stratified by BL depression, women who were likely depressed experienced a lesser change/improvement in their sun safety behavior across both time points (BL to F1 t=3.1, df=19, p<.01, Cohen's d=4.3; BL to F2 t=2.8, df=19, p<.01, Cohen's d=4.1) than those who were not depressed (BL to F1 t=4.9, df=37, p<.001, Cohen's d=4.3; BL to F2 t=5.0, df=37, p<.001, Cohen's d=5.4). In an income-adjusted regression model of women's sun safety at F2, BL sun safety remained significantly associated (B=0.5, SE B=0.1, p=.001) but depression did not (B=-0.4, SE B=0.2, p=.09).

Conclusions: Behavioral counseling prepartum increased women's sun safety adherence, regardless of their risk for depression. Attending to pregnant women's affect during preventive counseling may increase its efficacy at controlling skin cancer.

134

Pilot Testing of a Family Communication Toolkit to Support Dissemination of BRCA1/2 Test Results Within Families

Chavez-Ochoa J, Boles A, Peshkin BN, Tercyak KP, O'Neill SC

Purpose: Cascade genetic testing significantly expands hereditary cancer control and prevention for individuals in kindreds known to carry highly penetrant germline variants, though sharing of this information within families remains lower than needed to achieve optimal benefits in individuals and the population. Therefore, we developed, refined and piloted an online toolkit to support sharing information within families and examined the feasibility, acceptability, and impact of the toolkit's components.

Methods: BRCA1/2 carriers who participated in prior research were contacted via email for study participation. Participants completed a baseline survey, were provided access to the platform containing multimedia education and communication support tools and then completed a second survey 14 days later. Assessment of change from pre to post was assessed by the Theory of Planned Behavior constructs as well as measures of feasibility and acceptability.

Results: Of the 93 carriers contacted, 36 (39%) responded for participation; 23 provided consent. Respondents who consented were significantly older than those who did not (aged 46 vs. 38, t=2.10, p=.02). While there were no significant changes in social norms (p=.39) or perceived behavioral control (p=.46), attitudes about talking to relatives became significantly more positive over time (4.6 vs. 5.8 out of 7, t=7.11, p<.001). Participants were satisfied overall with the content, including ratings of 3.3-3.4/4 for content related to the importance of sharing results, initiating difficult conversations, overcoming barriers, and taking next steps. 90% endorsed the website as helpful in talking to family. The lowest rating was for the usefulness of an email template to notify family (2.8/4), with only 63% finding this helpful. Additional information about specific recommendations for testing, risk management, and age milestones for testing and cancer risk management was requested.

Conclusions: Use of a communication toolkit can improve attitudes regarding, and potentially facilitate, sharing of genetic testing results within families. Study results come from unfacilitated use of materials. Connection with a healthcare provider has the potential to increase effectiveness and adoption.

135

Promoting Cancer Prevention and Control: A Systematic Review of Physical Activity Interventions for Asian Americans

Sheng J, Wang H, and Hitchcock M

Purpose: Despite the well-documented benefits of physical activity (PA) for cancer prevention and control, most PA interventions have not been tailored for Asian Americans (AsA), who face rising cancer incidence and a slower decrease in cancer mortality compared to other racial groups. This study aims to systematically review the PA interventions designed for AsA to prevent or manage cancer outcomes.

Methods: A systematic search was conducted across five databases: PubMed, PsycINFO, CINAHL, Web of Science, and Scopus. Interventional studies that included PA-promoting components in AsA adults for cancer prevention or control were included. Study selection was performed independently by two reviewers.

Results: The literature search yielded 798 articles, with five studies meeting the inclusion criteria. Four focused on cancer prevention and one on cancer control. The study populations included Filipinos (n=2), Chinese (n=1), Koreans (n=1), and a mixed group of Asians and Hispanics (n=1). Geographically, two studies were conducted in California, two in Texas, and one in New York City. Sample sizes ranged from 45 to 1,054 participants, with program lengths ranging from 8 weeks to 18 months. Only one study focused solely on PA promotion, while others included multiple components such as cancer screening and dietary interventions. All programs incorporated some level of cultural adaptation, with three focusing solely on language adaptation and others including in-depth adaptations such as culturally appropriate exercises with music and culturally specific social apps. PA was self-reported across all studies, with all showing some increase in PA levels.

Conclusion: PA interventions targeting cancer prevention and control for AsA are limited. The findings showed PA levels improved following interventions, suggesting their potential effectiveness. However, the reliance on self-report PA limits accuracy. Existing programs were conducted in metropolitan areas, raising concerns about rural needs. While all studies included some cultural adaptations, most focused primarily on language. Future research should expand PA interventions to rural areas, enhance cultural adaptation, and evaluate long-term effectiveness and sustainability.

136-T

Psychological Predictors of Decisional Conflict for Risk-Reducing Mastectomy After Polygenic Risk Score Results in BRCA1/2 Carriers

Ongaro G, Salafia C, Sheikh R, Schofield E, Clark DF, Ebrahimzadeh J, Chittenden A, Stopfer JE, Brower J, Hay JL, Offit K, Garber JE, Domchek SM, Robson ME, Hamilton JG

Purpose: Women with BRCA1/2 pathogenic variants face complex decisions about risk-reducing mastectomy (RRM). Polygenic risk score-based test results (PRS), that provide more precise breast cancer risk estimates, may help inform risk management decisions. This study aimed to identify cognitive and emotional predictors of RRM decisional conflict in breast cancer unaffected BRCA1/2 carriers after receiving PRS.

Methods: Data were collected via self-report using validated measures before (T0) and 1-week after (T1) receiving PRS. Cognitive factors included breast cancer risk perceptions and tolerance for ambiguity, while emotional factors included anxiety, depression, distress about cancer risk, and genetic testing concerns. Regression models were used to examine the associations between cognitive and emotional variables (measured at T0 and T1) and decisional conflict at T1, controlling for decisional conflict at T0, PRS, and demographics (age, income, education, and BRCA1 vs. BRCA2 status).

Results: Participants were 255 female carriers (Mage=39.1, SD=11.8; >90% non-Hispanic White). Breast cancer risk perceptions were high and did not change pre- to post-PRS (p>.05). However, decisional conflict significantly decreased at T1, with mean scores dropping from 33.5 to 26.9 (t (246) = 6.6, p< .001; range 0-94), though moderate conflict remained. Decisional conflict at T0 was a strong predictor of decisional conflict at T1 (β= 0.56, p< .001), while PRS and demographics were not (p>.05). Emotional factors such as depression (β=0.17, p=.035) and genetic testing concerns (β=0.20, p=.011) at T1 were significantly associated with decisional conflict at T1, but anxiety and distress about cancer risk were not (p>.05). Among cognitive factors, only affective breast cancer risk perception (β=0.18, p=.017) at T1 was significantly associated with decisional conflict at T1, but tolerance for ambiguity was not (p>.05).

Conclusions: The reduction in RRM decisional conflict after PRS suggests PRS may facilitate personalized decision-making among BRCA1/2 carriers. Targeted interventions addressing emotional factors after PRS, particularly depression and genetic testing concerns, may help alleviate ongoing decisional conflict and promote more confident risk management choices.

137-T

Swipe Right on Sun Safety: Using Social Media to Promote Skin Cancer Prevention Awareness among Young Adults

Mendoza JM, Perez D, Statman MR, Sleiman, Jr. MM, Shahrour N, Gratz BW, Bu SW, Tercyak KP

Purpose: Young adults (YAs) are increasingly turning to social media as a primary source of health information, including cancer prevention strategies. This study identified gaps in YAs' skin cancer knowledge and behavior, along with the potential for social media to promote skin cancer awareness.

Methods: Undergraduate and professional students enrolled at a private university were surveyed about their skin cancer knowledge and behavior (e.g., sunscreen use), as well as university-managed social media content. Descriptive statistics and bivariate associations were tested to identify potential intervention targets and tailored social media content.

Results: Among N=230 students (M age=23.7; 24.3% undergraduate; 34.3% identified as White race only, 7.8% Latine; 46.5% subscribers to university-managed social media), 34.2% were unaware that skin cancer is cancer's most common form, 52.6% did not regularly reapply sunscreen, and 76.1% did not use on-campus sunscreen dispensers. Additionally, 48.2% did not wear a hat in the sun and 60.4% did not check the UV index. Those with lower skin cancer knowledge were less likely to regularly use sunscreen (r=.13, p=.03) and more frequently indoor tanned (r=-.09, p<.10). Less frequent sunscreen users also engaged in less frequent sun safe behaviors (r=.53, p<.001). Moreover, subscribers of university-managed social media were generally younger (t=-3.8, df=228, p<.001) and predominantly identified as White race only (X2=.04, p=.03). Younger students also tended to know less about skin cancer (r=.09, p<.10), while those who identified with non-White races used SPF≥30 sunscreen (t=-2.8, df= 224, p<.01), sought shade (t=-1.4, df=223, p<.10), and wore protective clothing more often (t=-4.4, df=223, p<.001).

Conclusions: Data suggest that university-based social media efforts to educate and counsel students (including those with fairer skin tones) about skin cancer prevention should focus on its prevalence, the benefits of regular sunscreen use, and availability of on-campus dispensers, along with the need to wear hats, check the UV index, and avoid indoor tanning. Such targeted initiatives can contribute to reducing skin cancer incidence by fostering preventive behaviors and encouraging consistent sun safety practices among YAs.

138-T

Tackling Clinical Trial Misinformation among Koreans in Los Angeles County through "Be Part of the Cure" Clinical Trials Awareness Campaign

Kim DH; Sung MJ, Moon K, Lee, JY, Acuna, N, Balingit, R, Surani, Z

Purpose: Cedars-Sinai Cancer Center's Community Outreach and Engagement (COE) developed a multi-level intervention to address negative perceptions and low participation in clinical trials among Korean immigrants in Los Angeles County. Several studies have shown that underrepresentation of minority populations in clinical trials is attributed to cultural beliefs, language barriers, historical mistrust of medical research, and lack of awareness about the benefits of participation.

Methods: With active involvement from the Community Advisory Board, COE co-created the "Be Part of the Cure" campaign, a culturally sensitive initiative to provide in-language cancer information, clinical trials education, and navigation through the cancer care continuum at Korean churches, in partnership with healthcare providers and Federally Qualified Health Clinics. COE's multicultural and multilingual staff trained Community Health Workers and navigators to expand outreach efforts and effectively engage target communities through workshops, one-on-one education, tabling events, media presence. COE uses a mixed-methods approach to collect data through surveys and informal qualitative conversations with Korean community members.

Results: Pre/post-tests administered to 73 Koreans during health education workshops showed significant increase in positive perceptions on clinical trials from 57% to 95%. Nine Korean cancer patients expressed interest in clinical trials, and 1 enrolled in a Neoadjuvant HER2-Targeted Therapy and Immunotherapy with Pembrolizumab clinical trial. During a community feedback session for the campaign, participants expressed concerns about collusion between pharmaceutical companies and researchers, while others referenced frequent portrayal of conspiracy surrounding clinical trials in Korean dramas, which they felt mirrored real-life fears. These findings underscore the ongoing mistrust of clinical trials and the influence of media on public perception.

Conclusions: Efforts to increase diversity and inclusion in clinical trials should focus on culturally sensitive recruitment strategies, language accessibility, community engagement, and building trust between researchers and communities.

139

The Association of Age, Gender Identity, Race/Ethnicity, and Religion with Sexual Health-Related HPV Vaccine Knowledge and Perceptions among Frontline Pediatric Clinical Office Staff

Keleman O, Mentado A, Arcadio Arce MC, Shifflett S, Moody J, Nacht CL, McDaniels-Davidson C

Purpose: Medical Assistants (MAs) and Licensed Vocational Nurses (LVNs) are a culturally and linguistically diverse workforce trusted by patients and parents. We aim to understand if sociodemographic characteristics among pediatric clinical office staff are associated with HPV vaccine knowledge and perceptions.

Methods: MAs and LVNs with pediatric clinical contact in California primary care practices completed a 50-item online survey (Aug to Oct 2024); respondents received $30 gift card incentives. The survey items included sociodemographic characteristics (age, gender identity, race/ethnicity, and religion), two knowledge questions, and two perception questions related to sexually stigmatizing beliefs about the HPV vaccine. Bivariate analyses (chi-square and t-tests) explored the association between sociodemographic characteristics and the sexuality-associated HPV vaccine knowledge and perception items.

Results: Of the 245 respondents, the mean age was 34.9¬ffl10.6 years, and 93% identified as women. Respondents were racially/ethnically diverse, with 63% identifying as Hispanic/Latino (including 1% Hispanic/Latino Black and <1% Hispanic/Latino Asian); the remainder identified as White (18%), Asian (9%), American Indian (3%), Black and Native Hawaiian/Pacific Islander (2% each), Asian/Pacific Islander and Middle Eastern/North African (1% each), and Multiracial (<1%). The most common religious affiliation was Catholic (44%); 21% were other Christian, 33% had no religious affiliation, and 2% were another religion. In bivariate analyses, age, gender identity, and religion were not associated with the knowledge or perception items. HPV vaccine perceptions differed between the three largest racial/ethnic categories, with Hispanic/Latinos indicating greater agreement with the vaccine encouraging promiscuity ($p<0.001$); this trend was replicated with the vaccine encouraging sexual risk-taking items as well, though small cell sizes precluded the chi-square test; no association was observed between race/ethnicity and knowledge items.

Conclusions: Culturally tailored education and empowerment in this workforce may correct sexually stigmatizing beliefs about the vaccine, promoting uptake among parents and patients.

140-T

Understanding the Roles of Nurses and Assistants in HPV Vaccine Communication

Kahn BZ, Licciardello Queen T, Kritikos KI, Ellingson MK, Reiter PL, Brewer NT

Purpose: HPV vaccination is a critical tool in cancer prevention. In pediatric primary care, nurses and assistants (including medical and certified nursing assistants) are underused resources in HPV vaccine communication. To determine the ideal roles for these clinical staff, we sought to characterize their current and potential future roles in pediatric HPV vaccine communication.

Methods: In 2022, we surveyed a national sample of 2,527 US providers, nurses, and assistants with a role in HPV vaccination for children, including 701 nurses and assistants (28%). The survey assessed participants' current roles in HPV vaccine communication, including recommending the vaccine, addressing parents' concerns about the vaccine, and their willingness to recommend HPV vaccine to children ages 9-12 years in the future.

Results: Providers were more likely than nurses and assistants to assess children's HPV vaccination status (96% vs. 90%), let parents know their child was due for the vaccine (95% vs. 85%), recommend the vaccine (98% vs. 72%), and address parents' concerns about the vaccine (97% vs. 83%) (all $p<.05$). In contrast, providers were less likely to administer the vaccine (37% vs. 74%, $p<.05$). Nurses and assistants working in clinics that use HPV vaccine standing orders were more likely to take on each communication role compared to their counterparts in clinics without standing orders (all $p<.05$). When considering future role expansion, 68% of nurses and assistants were willing to have the role of recommending HPV vaccine for children ages 9-12. Among nurses and assistants, willingness to recommend HPV vaccine was less common among individuals with more experience or who worked at solo or group clinics (both $p<.05$). Willingness was higher among those who worked at clinics that provided more than half of their HPV vaccine doses through the Vaccines for Children program ($p<.05$).

Conclusions: Nurses and assistants already occupy an important role in HPV vaccine communication, but there is an opportunity for them to expand their roles. As national guidelines evolve to begin HPV vaccination at age 9, a full-team approach to HPV vaccine communication can highlight the skills and training of nurses and assistants and ensure high HPV vaccine coverage among children.

141-T

Using HPV Vaccine Standing Orders and Communication to Address Vaccine Disparities: A Qualitative Study

Mansfield LN, Kahn BZ, Kokitkar S, Kritikos KI, Brantz S, Brewer NT

Purpose: HPV vaccination is important for cancer prevention, especially in minoritized populations disproportionately affected by HPV cancers. We sought to characterize the benefits and challenges of using HPV vaccine standing orders for children ages 9-12, understand staff roles in HPV vaccine communication, and explore perceived factors contributing to vaccine disparities among racial and ethnic minoritized children.

Methods: Participants were a sample of 16 US healthcare providers, nurses, and medical assistants working in primary care from 8 clinics with varying use of HPV vaccine standing orders. We conducted virtual, semi-structured interviews in 2022 and analyzed results using reflexive thematic analysis. Our interview guide was developed with feedback from a clinical advisory board and asked participants to reflect on clinical experiences with pediatric HPV vaccination.

Results: Themes reflected benefits and challenges of using HPV vaccine standing orders, and barriers to improving HPV vaccine access and communication. Benefits included more efficient clinic flow; fewer missed opportunities and promotion of early vaccination; and normalization of HPV vaccination as routine. Challenges included exacerbating existing HPV vaccine communication barriers, and concerns about nurses' and assistants' confidence in using standing orders due to the complexity of the vaccine administration schedule. Factors perceived as contributing to vaccine disparities included lack of transportation, underinsurance, language barriers, and cultural beliefs about HPV vaccine. Strategies to address disparities included leveraging nurse-only visits for catch-up vaccination; engaging clinical staff to follow up with overdue children; and educating parents on HPV vaccination before their children are vaccine eligible.

Conclusions: Using HPV vaccine standing orders can promote autonomy for nurses and assistants, and address vaccine access barriers through activities such as nurse and follow-up visits with children overdue for HPV vaccine. To effectively use HPV vaccine standing orders, communication training and culturally and linguistically appropriate vaccine resources are needed. Such efforts can improve HPV vaccine communication with parents and mitigate existing barriers.

142-T

Visual Depictions of Cancer Risk: A Systematic Review

Platter, HN, Roberts, MC, Kelley, DE, Seaman, EL, Ellis, EM, Han, PKJ, Klein, WMP

Purpose: Cancer risk information is increasingly communicated to and sought by the public, yet it is unclear if it is accurate and understandable for a diverse audience. Research supports the use of visual risk depictions to overcome barriers related to health literacy and numeracy, yet it is unclear which are most effective for conveying cancer risks. The aim of this systematic review was to understand the effectiveness of different visual risk communication approaches within the context of cancer risk communication.

Methods: Searches using PubMed, PsychINFO, and EMBASE were conducted on 4/18/2018 and 1/22/24. The search strategy outlined in Visscher's et al. 2009 served as the foundation from which search terms were developed with the support of a clinical informationist. Studies were screened for inclusion in three phases: 1) abstract review based on inclusion criteria, 2) full text review, and 3) if eligibility was confirmed, authors completed data extraction. Specifically, we examined 1) content components specific to visual format (e.g., types of icons used) and 2) context (e.g., cancer site).

Results: The systematic search resulted in 3962 unique articles after duplicates were removed. A total of 55 manuscripts with 59 studies were considered suitable for inclusion. Results contained 69.5% quantitative, 18.6% qualitative, and 11.9% mixed-methods studies. Most studies focused on breast cancer (44.1%), followed by colorectal (18.6%). Across studies, most participants were female (82.7%) and 28.8% included theory. Only 3.39% of studies sampled participants with low numeracy/health literacy and 5.08% with racial/ethnic minorities. Icon arrays (57.6%), other visual types (i.e., infographics; 32.2%), and bar graphs (30.5%) were the most tested visual risk depictions with health cognitions, knowledge, and preference as the most evaluated outcomes.

Conclusion/Discussion: Icon arrays, other visuals, and bar graphs are the most studied, but icon arrays generally perform better relative to other visual risk formats. This research can guide researchers and practitioners on how to effectively communicate cancer risks to enable informed decision-making.

143

Who is Most at Risk for Believing in Cancer Misinformation? A Novel Cancer Misconceptions Measure (CMM)

Warner EL, Waters AR, Turner C, Tovar I, Ito K, Millar M, Johnson SB, Codden RR, King A.

Purpose: Evaluate sociodemographic factors associated with a novel measure of cancer misinformation belief.

Methods: We recruited N=288 adults ages 18 and older through an online survey panel, Forthright, in February 2024. Participants were surveyed about sociodemographics, political beliefs, health literacy (e.g., HL6) and 12 common myths and misconceptions about cancer (e.g., hereditary risk, cancer causes & cures). Through exploratory factor analysis, 9 questions were retained for a novel Cancer Misconceptions Measure (CMM, range 0-9; higher scores indicate more misconceptions). One-way ANOVA was used to assess bivariate differences in CMM by sociodemographics. A multivariable linear regression was used to estimate the influence of age, race, ethnicity, political views, and health literacy on CMM.

Results: Participants were on average about 45 years (Standard Deviation (SD): 17.0), cisgender women (49.8%), White (73.5%), non-Hispanic or Latine (79.3%), urban (66.2%), married (45.3%), politically moderate (43.8%), had some college or higher education (69.6%), and had adequate health literacy (86.2%). Household income was evenly distributed (<$35,000 (36.9%), $35,000-$75,000 (30.9%), and >$75,000 (32.2%)). Average CMM score was 4.8 (SD: 2.8). CMM declined with increasing age (p=0.02) and CMM was highest among African American or Black respondents (CMM: 5.8) and those identifying as Another race (CMM: 6.4, p=0.02). Hispanic or Latine respondents held more misinformed cancer beliefs than Non-Hispanic or Latine respondents (4.6 vs. 5.6, p=0.01). CMM increased across the political spectrum; CMM was highest among the most conservative (CMM: 6.1) and lowest among the most liberal (CMM: 3.2, p=0.001). Health literacy was positively associated with CMM (adequate literacy: 4.6 vs. low literacy 6.1, p=0.007). Being ages 30-39 (b=1.5, 95%CI 0.2-2.7 vs. +70 years), having low health literacy (b=0.9 95%CI: 0.02-1.8 vs. adequate health literacy), and holding conservative beliefs (b=2.4, 95%CI 1.0-3.8) was independently associated with higher CMM in multivariable models.

Conclusions: Individuals who are younger, have low health literacy, and are conservative may particularly benefit from interventions designed to reduce the impact of cancer misinformation.

144

Process Perspectives on Lung Cancer Screening in Primary Care

Nguyen DT, Ezenwankwo E, Phan L, DiCarlo MA, Indictor A, Myers RE, Eberth JM

Purpose: Despite recommendations, barriers remain at multiple levels to implementing a low dose computed tomography (LDCT) for lung cancer screening (LCS) in primary care. One of the more complicated aspects is eligibility assessment and shared decision-making (SDM), as LCS has specific eligibility criteria and a unique risk-benefit ratio. In this case study, we illuminate how primary care providers in an urban primary care setting identify eligible patients and initiate LCS, while discussing workflow gaps and opportunities.

Methods: We conducted and transcribed semi-structured interviews with primary care providers (7) and medical staff (3) at the Jefferson Health (JH) System. Analysis was conducted using thematic analysis.

Results: Three broad phases—case identification and eligibility assessment, SDM, and ordering LDCT/follow-up—define LCS in primary care. Although different scenarios may trigger screening, the responsibility for identifying high-risk patients rests with the provider. Critical factors, such as awareness of eligibility criteria and the necessary skills and tools to conduct assessments, emerged as essential to the process. Although there are several pathways to obtain SDM and smoking cessation counseling—the most common at JH involves referring eligible patients to a dedicated LCS program. Several opportunities, including expanding the role of practice staff, strengthening LCS-based electronic health record workflow, improving systematic data collection, using decision aids in SDM, and expanding HEDIS measures to include LCS, were identified to address current gaps and increase uptake of LCS.

Conclusions: Our study provides important insights into the pathways for case identification, SDM provision, and LDCT order/referral in an urban primary care setting. By highlighting workflow challenges/opportunities for improvement, this research offers a roadmap for identifying barriers and developing quality improvement strategies to enhance the LCS process.

145

Provider Confidence Related to Engaging Patients in Shared Decision Making about Lung Cancer Screening

Myers R, Sifri R, Bittner-Fagan H, Careyva B, Felix T, Zhan TT, Shimada A, DiCarlo M, Johnson M

Purpose: The United States Preventive Service Task Force (USPSTF) and the Centers for Medicare and Medicaid Services (CMS) both recommend annual lung cancer screening (LCS) for older adults (USPSTF: 50 to 80 years of age; CMS: 50 to 77 years of age) who have > 20 pack-years of smoking and who currently smoke or quit smoking in the previous 15 years. The UPSTF recommends shared decision making (SDM) prior to LCS, and the CMS requires SDM for coverage of screening. SDM performance is suboptimal in primary care and must be increased to achieve the promise of LCS.

Methods: We are conducting a large NCI-funded R01 study, which involves delivering provider and patient support for SDM about LCS in 4 health systems. In the study, we invited consenting primary care providers (physicians nurse specialists, and physician assistants) to complete a baseline survey that assessed provider confidence related to engaging patients in SDM about LCS. We assessed confidence as a continuous measure using 6-item Likert-type scale (1 = Strongly Disagree to 4 = Strongly Agree). The survey also included items to measure respondent knowledge about SDM and LCS (5- item index), perceptions about SDM (10-item Likert-type scale), perceptions about LCS (6-item Likert-type scale), and sociodemographic background. We performed univariable analyses and modeled provider confidence in SDM performance.

Results: We found that the average provider confidence in SDM score was 3.10 and ranged from 1.50 to 4.00. In addition, we discovered that providers who held positive views related to SDM (importance, efficacy, and the value of training) had higher levels of confidence in their SDM capacity ($p = 0.034$). We also determined that providers who had positive perceptions related to LCS (convenience, efficacy, risk, and cost) had a higher level of confidence in their capacity to engage patients in SDM about LCS ($p < 0.001$).

Conclusions: Findings from primary care provider baseline survey data analysis suggest that primary care provider confidence in their capacity to engage patients in SDM about LCS was moderate. As part of the effort to increase LCS, health systems should consider offering providers support for engaging patients in SDM about LCS and address provider perceived barriers to screening.

146

Using Categorical EMR Data on Pack Years of Smoking History to Improve the Efficiency of Patient Outreach in Lung Cancer Screening

Myers R, Zhan Tingting, Shimada A, DiCarlo M

Purpose: Current lung cancer screening (LCS) guidelines recommend shared decision making (SDM) and LCS for older adults who have > 20 pack years of smoking history. LCS rare are low across the United States. Most health systems are not using electronic medical record (EMR) data to identify patients who are potentially eligible for SDM and LCS and are not supporting outreach to verify screening eligibility and engage eligible patients in SDM and LCS. The perceived incompleteness and inaccuracy of EMR data on pack years of smoking history has limited the use of EMR data to facilitate patient outreach to increase SDM and LCS rates. This study assessed the concordance of data in the EMR and data elicited through self-report (SR) related to identifying patients who are not eligible for SDM and LCS.

Methods: We are conducting a large NCI-funded R01 study, which involves the use of patient outreach to engage patients in SDM about LCS. As part of this study, we initially Identified 444 patients in 3 health systems with patients who were 50 to 77 years of age and had a history of smoking in the EMR. For each patient, we initially categorized the EMR data as < 20 and > 20 pack years. We then attempted to contact the patients by telephone to ascertain self-reported (SR) data on smoking history. Finally, we compared EMR and SR pack year data to ascertain concordance in terms of have < 20 pack years of smoking, thus making them ineligible for outreach to verify eligibility for SDM and LCS.

Results: We obtained complete SR and EMR data for pack years on 248 patients. Overall, the distribution of patient SR and EMR pack years was as follows: SR and EMR < 20 (n= 104); SR < 20 and EMR > 20 (n=24); SR > 20 and EMR < 20 (n=29), and SR and EMR > 20 (n = 29). We also observed that 128 patients had SR < 20 pack years and 104 of them had concordant data in the EMR (NPV = 81.2%, 95% CI: 73.4, 87.6). Thus, SR and EMR data were consistent in identifying those who did not need patient outreach.

Conclusions: These findings suggest that health systems should consider using categorical EMR data for patients with < 20 pack years of smoking history to improve the efficiency of delivering patient outreach and supporting the engagement of screening eligible patients in SDM and LCS.

147

Reaching and Consenting Eligible Primary Care Patients for a Lung Cancer Screening Study

Fagan HB, Thompson LA, Johnson MB, Sifri R, Felix T, Careyva B, Myers R

Purpose: Research is needed to identify interventions that may be used in health systems to increase LCS rates. Conducting such studies is likely to involve using electronic medical record (EMR) data to engage patients who are eligible for screening. Our research team implemented an EMR-based strategy for use in identifying and recruiting primary care patients across four health systems to a randomized, controlled multi-level intervention trial known as the MidAtlantic Provide and Patient Support Study (MAPPS) Study.

Methods: The research team initially developed an algorithm based on Centers for Medicare and Medicaid Services LCS eligibility criteria (i.e., 50 to 77 years of age, currently/formerly smoking, and quit years). To enhance efficiency in this process, we modified the algorithm to assess cigarette pack years of smoking exposure and quit years as categorical measures. We are using the algorithm to review EMR data for patients from 28 primary care practices to identify individuals who were potentially eligible for LCS and have a scheduled office visit. On a weekly basis, we randomly select cohorts of patients, and research coordinators attempt telephone contact to verify screening eligibility and obtain informed consent for the study.

Results: Over three months, our team identified 6,509 patients across the four health systems who were potentially eligible for LCS and randomly selected 1,574 of them for telephone contact. We contacted 1,052 (67%) patients and found that 270 (26%) were eligible for LCS. Among patients determined to be eligible for LCS, research coordinator outreach contact resulted in 125 (39%) being consented to participate in the study . An earlier effort conducted over three months using raw EMR data yielded a slightly lower eligibility rate (22%, p = 0.1278) and substantially lower consent rate (26%, p = 0.0296).

Conclusions: Using categorical EMR data on patient smoking history and status is likely to be more effective than using raw EMR data to identify patients who are potentially eligible fore LCS. This approach is also more likely to increase the efficiency of health system patient outreach in terms of research and may also be a useful strategy for improving LCS rates as part of quality improvement in primary care.

148

Increasing Lung Cancer Screening Referral/Order and Completion Rates in Primary Care

Myers R, Sifri R, Johnson M, DiCarlo M, Shimada A, Zhan TT, Jackson H, Indictor A, Burgess N, Shaak K, Mahon I, Pisano E

Purpose: Our research team conducted a pragmatic study of a primary care-based patient outreach strategy designed to increase LCS rates in two health systems.

Methods: On a weekly basis, we used electronic medical record (EMR) data from a primary care practice in each health system to identify patients who were potentially eligible for LCS and had a scheduled office visit. We randomly selected and assigned patients either to a usual care control group or an intervention group. Then, we attempted telephone contact with intervention group patients before their office visit to verify screening eligibility and mailed eligible patients an LCS infographic. We also arranged a decision counseling (DC) call with eligible patients for shared decision making about LCS. The research team assessed LCS referral/order and completion rates for 1,400 participants in the Control Group, 329 intervention group participants who did not receive decision counseling (OC Group), and 20 intervention group participants who received decision counseling (OC-DC Group).

Results: LCS referral/order rates in the OC-DC Group, OC Group and Control Group were 65%, 11% and 9%, respectively ($p<0.001$). Multivariable analyses show that the LCS referral/order rate was significantly higher among patients in the OC-DC Group than in the OC Group (OR=13.87, CI: 5.10, 37.75) and in the Control Group (OR=16.59, CI: 6.37, 43.15) and among patients who currently smoke versus those had quit smoking (OR=2.37, CI: 1.72, 3.27). LCS completion rates in the OC-DC Group, OC Group, and Control Group were 40%, 5%, and 6%, respectively ($p < 0.001$). Multivariable analyses show that the LCS completion rate was significantly higher in the OC+DC Group than in the OC Group (OR=11.62, CI: 4.14, 32.64) and in the Control Group (OR=9.59, CI: 3.76, 24.44), and among patients who currently smoke versus those who had quit smoking (OR=1.89, CI: 1.28, 2.80). Covariates considered in multivariable analyses include patient age, sex, race/ethnicity and smoking status.

Conclusions: Patient outreach with decision counseling is an intervention that may increase LCS referral/order and completion rates in primary care. Randomized trials are needed to assess intervention effects overall and in diverse patient populations and subgroups.

149

A Community Health Worker-Driven and Integrated Interactive Text Messaging Intervention to Promote Smoking Cessation and Lung Cancer Screening Uptake Rates among High-Risk Asian immigrants: A Feasibility Pilot RCT Study

Wen KY, Barta J, Liang J, Koh KH, No R, Zhu S, Li K, Shusted C, and Juon HS.

Purpose: Lung cancer is a leading cause of mortality among Asian-Americans, but lung cancer screening (LCS) uptake remains low, especially in high-smoking subgroups. Few interventions target Asian-Americans. This pilot study evaluated the Connect4LungHealth intervention to improve LCS uptake and promote smoking cessation in high-risk Chinese and Korean communities using a Community-Health Worker (CHW) approach and mobile text messaging (TXT).

Methods: Connect4LungHealth is a culturally-tailored program developed with local Chinese and Korean stakeholders. LCS-eligible individuals were recruited through community networks and attended a Lung Health workshop. They were then randomized to the Connect4LungHealth or attention control (AC) group for a one-month intervention, with follow-ups at baseline, 1-month, and 3-months. The Connect4LungHealth group received three weekly text messages on smoking cessation, self-regulation, and LCS awareness, with proactive CHW check-ins. The AC group received messages on healthy eating and CHW contact info. LCS-interested participants were referred to our centralized LCS Program for same-day low-dose CT (LDCT) scans, supported by CHWs.

Results: Of 48 eligible individuals, 36 (75%, 19 Chinese, 17 Korean) completed baseline assessments. Participants averaged 61 years old; 86.1% were male smokers, 80.6% had a high school education or less, and 50% had limited English proficiency. Retention exceeded 75%, with high satisfaction reported. The Connect4LungHealth group showed greater cigarette reduction, increased self-efficacy, and a 40% LDCT completion rate, compared to 12.5% in the AC group. Post-intervention interviews highlighted cultural barriers and unmet needs for smoking cessation and navigation.

Conclusions: This pilot demonstrated the feasibility and potential impact of the Connect4LungHealth intervention in improving LCS uptake and reducing smoking among high-risk Asian populations. The TXT and CHW approach is promising for underserved communities, warranting larger trials for validation.

150-T

A National Snapshot of Lung Cancer Screening Adherence in Diverse Practice Settings

Hirsch EA, Fathi JT, Cuipek A, Futrell M, Basu-Roy U, Carter-Bawa L

Purpose: The efficacy of lung cancer screening (LCS) to reduce lung cancer- specific mortality is heavily dependent on adherence to recommended screening guidelines. Real-world adherence rates reported in the literature have predominantly represented rates from academic medical centers and have consistently been reported to be <50%, drastically lower than the >90% rates described in clinical trials. The purpose of this research was to determine adherence rates and processes in diverse practice settings, including community and rural LCS programs.

Methods: Participants for this survey study included a nationally representative sampling of LCS navigators recruited from the GO2 for Lung Cancer, Screening Centers of Excellence, and the LUNGevity/AONN+ Lung Screening Navigator Network. Additional recruitment was completed using snowball sampling of navigator contacts. Surveys were distributed electronically by email and listservs. Questions assessed practice location, setting, service area, organization, and tracking processes. Respondents were asked to report no-show, annual, and interval adherence rates for their programs.

Results: 73 completed responses have been received from 31 states with 85% identifying as as non-academic medical settings, 15% primarily serving rural areas, and 44% in a centralized structure. The median (interquartile range) yearly screening volume is 1,818 (1,000-3,334) and the average number of personnel is 4.8 (±standard deviation of 3.4). Almost half (47%) of programs use Microsoft or Google products to track patient follow-up, alone or in combination with electronic health records or commercial software. The no-show rate is tracked by 49% of responding programs, with a median no-show rate of 10% (5%-20%) reported. Annual and interval adherence rates were reported by 78% and 85% of programs with median rates of 70% (50%-75%) and 80% (60-85%), respectively.

Implications: Adherence rates reported predominately by community-based screening navigators in this study reflect higher rates than in the literature, indicating that non-academic programs are successful at maintaining adherence. More research is needed to understand LCS delivery models and best practices that impact adherence rates outside of clinical trial and academic settings.

151-T

A Population-Based Study of Carcinoma Risk in Children with Congenital Anomalies

Tark JY, Desrosiers TA, Chambers TM, Scheurer ME, Shumate C, Nembhard WN, Yazdy MM, Nestoridi E, Janitz AE, Tanner JP, Kirby RS, Salemi JL, Huff CD, Plon SE, Lupo PJ, Schraw JM

Purpose: We evaluated the associations between chromosomal and non-chromosomal congenital anomalies and the risk of pediatric carcinomas, a group of rare tumors about which little is known.

Methods: We leveraged the Genetic Overlap Between Anomalies and Cancer in Kids (GOBACK) study, which is a population-based cohort of >21 million births with linked data from birth certificates as well as birth defect and cancer registries between 1990-2018 in nine U.S. states. We used Cox regression to estimate the hazard ratio (HR) and 95% confidence interval (CI) for the risk of carcinomas among children with major congenital anomalies relative to children without these conditions, adjusting for sex, birth state, and maternal age. We performed sensitivity analyses excluding cases diagnosed within the first two years of life to assess the potential impact of incidental discovery of anomalies during cancer diagnosis or treatment.

Results: Our study included 21,933,476 children, including 641,827 with major congenital anomalies and 833 with carcinomas (incidence: 3.9 per million person-years). Mean follow-up time was 9.9 years. The most common carcinomas were thyroid (N=561) and hepatocellular carcinoma (HCC; N=68). The prevalence of major congenital anomalies was 4.2% in children with carcinomas and 2.9% in those without. The risk of carcinomas was increased for both children with chromosomal or genetic syndromes (HR 4.7, CI 2.3-9.5; N=8) as well as for children with non-syndromic anomalies (HR 1.7, CI 1.2-2.4; N=35). When we evaluated carcinomas by type, we observed associations between 1) chromosomal or genetic syndromes and renal cell carcinoma (HR 59.6, CI 23.7-149.5; N=5) and 2) non-syndromic congenital anomalies and HCC (HR 4.8, CI 2.3-10.1; N=8). We found no association between major congenital anomalies and thyroid carcinoma. Results were similar after excluding those who developed carcinomas within the first two years of life.

Conclusions: In this comprehensive analysis, major congenital anomalies were associated with an increased risk of carcinomas among children. Our findings could yield new insights into the etiologies of carcinomas in childhood and inform clinical surveillance practices for children with congenital anomalies.

152

Adherence to Cancer Screening Guidelines among Women in a Large US Cohort

Faw KM, Deubler EL, Winn JR, Patel AV

Purpose: Examine adherence to all cancer screenings among women.

Methods: The Cancer Prevention Study- 3 is a prospective cohort study established by the American Cancer Society (enrollment 2006-2013). At enrollment, in 2015 and in 2018, participants reported cancer screening tests and year(s) of each screening. Mammography, colonoscopy, sigmoidoscopy, stool testing, and low dose lung computed tomography (CT) scans were self-reported among cancer-free women aged 45 years or older (n=105,706). Screening eligibility in 2018 was determined by age and smoking history (for lung cancer). Women were considered adherent in 2018 if they had a mammogram in the last year; a colonoscopy within 10 years or a sigmoidoscopy within 5 years or a stool test in the last year; and a low dose lung CT in the last year. Eligible screenings for each woman were based on American Cancer Society screening guidelines.

Results: There were 105,706 women eligible for mammography, among whom 90,578 women were also eligible for colorectal cancer screening, and 1,331 women were eligible for all three screenings. Individually, 80.1% of women were up to date with their mammogram, 85.0% with their colorectal cancer screening, and 13.1% with their lung CT scan. Among women eligible for both breast and colorectal cancer screening, 72% were fully adherent (had both screenings up to date). However, 12% of women who were adherent to breast cancer screening, were not adherent to colorectal cancer screening, with over half of those women never having had a colorectal screening. Of those eligible for all three screenings, only 11% were fully adherent, 81% were partially adherent (58% had two screenings, 23% had one screening), and 6% had no cancer screenings.

Conclusion: Although rates of individual cancer screenings are generally high, fewer women adhere to all cancer screenings for which they are eligible. Implementing "bundled" cancer screening (getting multiple screenings during a single visit) could increase total screening adherence and potentially help diagnosis more cancers at an earlier stage when they are more treatable.

154

Choice Architecture in Cascade Genetic Testing (CHARGE) Study

Rodriguez Y, MS, CGC; Getchell GMS, CGC,
Pirzadeh-Miller S, MS, CGC; Pena L,Rodriguez J,
Ibidapo T, Bereket S,Lee M, Ph.D,
Henrikson N, Ph.D. MPH, Makhnoon S, Ph.D.

Purpose: Cascade testing for hereditary cancer syndromes enables early cancer detection and prevention. However, uptake of cascade testing among at-risk relatives (ARRs) remains low due to low intrafamilial communication and high testing costs. We address these barriers using two behavioral science tools - default effect and zero price effect - to improve cascade testing rates.

Methods: The ongoing two-arm hybrid type II pragmatic trial (NCT06284330) compares usual care to a choice architecture intervention (direct mailing of testing kits to ARRs, education on the importance and cost of testing including free testing window). We assess effectiveness (cascade testing rate), feasibility of intervention, and participant acceptability through surveys and programmatic data.

Results: Since February 2024, 34 probands with pathogenic/likely pathogenic (P/LP) variants in cancer susceptibility genes have been consented and randomized, who referred 66 ARRs. For first-degree ARRs, the average cascade testing rate was significantly higher in intervention compared to control (39% vs 5%, $p<0.005$, $\chi 2$). Across first, second, and third-degree ARRs, 57.2% (28/46) of intervention ARRs underwent testing, with an average time to result disclosure of 55 days (range: 23-87 days). Notably, 25% of intervention ARRs (7/28) carried the familial P/LP variant. Follow-up surveys indicated that most probands (11/11) and ARRs (9/10) felt that enrolling in the study and receiving test results was the right decision, with no harm noted, indicating low decisional conflict. Half of ARRs reported minimal anxiety, and 60% felt relieved by their results. Additionally, 80% (8/10) had no uncertainty or distress regarding their results and felt well-informed about options for early cancer detection and prevention.

Conclusions: Preliminary data suggest that a choice-architecture based cascade testing intervention is feasible to implement and significantly increases cascade testing rate among ARRs. ARRs reported low decisional conflict, minimal anxiety, and clear understanding of early cancer detection and prevention options. This study is the first to leverage the free genetic testing window to improve cascade testing rates and can advance precision cancer prevention for at-risk populations.

155-T

Collider Bias in Estimating the Effect of Cancer Screening on Post-incident Outcomes

Coates MM, Zhang ZF, Arah OA

Purpose: Studies of the effect of cancer screening on post-incident cancer outcomes are restricted to people with incident cancer or pre-cancer malignancies, potentially leading to selection bias. This study aims to show examples of this bias in the literature, explain the structural causal mechanisms underlying this bias, and estimate the potential impact of this bias through simulations.

Methods: First, we reviewed cancer screening literature to identify and characterize studies aiming to estimate the effect of screening on post-incidence outcomes. Second, we constructed causal diagrams of the mechanism underlying potential selection bias (collider bias) when comparing post-incidence outcomes in screened and unscreened individuals. Third, we simulated data using causal diagrams and parameters informed by published literature to quantify the degree of bias in estimates of the effects of screening on post-incidence outcomes.

Results: We identified multiple studies on screening for cervical, colorectal, and other cancers that sought to estimate the effect of screening on post-incidence outcomes, such as stage at diagnosis, cancer recurrence, or cancer mortality, that did not consider this potential bias. In a causal diagram, incident cancer is (i) a mediator between screening and post-incidence cancer consequences and (ii) a potential collider between screening and risk (e.g., genetic, infectious, or environmental) factors that lead to both higher cancer risks and more aggressive tumors. The direct effect of screening on post-incidence outcomes (i.e., the screening effect that conditions on cancer diagnosis) requires adjustment for this mediator-outcome confounding, even under randomized screening. In simulations based on results from published studies on cervical and colorectal cancer screening, strong uncontrolled confounding of cancer incidence and the post-incidence outcome was usually necessary to create substantial bias in the estimated effect of screening on the post-incidence outcome, though the degree of bias varied.

Conclusions: Cancer screening studies and those with a similar causal structure should adjust for common causes of cancer incidence and subsequent cancer outcomes or use bias analysis to assess potential collider bias.

156

Community Engagement to Identify Intervention Considerations and Implementation Strategies for a Salon-based Cervical Cancer Screening Intervention

Palmer KNB, Mantina NM, Adegboyega A, Sokale IO, Pryor K, Suero-Davis A, Hatcher J

Purpose: Black women in the U.S. face higher cervical cancer mortality due to delayed diagnoses from lower screening rates. Factors like provider bias, financial barriers, and limited healthcare access—especially among women aged 40-64—contribute to this disparity. The recent FDA approval of HPV self-collection and promising research into clinical and home-based methods offer hope for expanding access. However, equitable distribution remains challenging. Our project addresses this by distributing HPV self-collection kits in non-traditional settings, like hair salons. The purpose of our study was to engage vested community members in group concept mapping to identify intervention considerations and implementation strategies for a salon-based HPV self-collection intervention.

Methods: Using the GroupWisdom and REDCap platforms, we collaborated with members of the Black Community Advisory Council of Tucson (Black CACTus). The concept mapping process involved five key steps: 1) Generating statements in response to a prompt, 2) Organizing the statements by meaning, 3) Evaluating the importance and feasibility of each statement, 4) Analyzing the cluster map, and 5) Reviewing the draft intervention.

Results: The Black CACTus (n=10) comprised hairstylists (n=3), salon clients (n=4), and healthcare providers (n=3), all identifying as Black women, with two also identifying as Latina and White. Ages ranged from 23 to 53 years. The brainstorming session produced 39 statements. Based on the sorting data, a six-cluster map was created, with a stress factor of 0.263. Intervention components related to test affordability and understandability of sample collection instructions were rated most important. The implementation strategy rated as most important was having a clean/private space for sample collection.

Conclusions: To enhance cervical cancer screening equity, it is essential to explore non-traditional settings like hair salons. Incorporating community voices and considering contexts is crucial when designing cancer screening initiatives for Black women. Our study's use of concept mapping in collaboration with community members identified key intervention elements and implementation strategies that could improve access to and uptake of cervical cancer screening.

158-T

Disparities in Lung Cancer Screening Utilization among Patients with COPD Clinical Phenotypes: A OneFlorida+ Database Analysis

Washington CJ, Karanth SD, Silvestri GA, Gould MK, Braithwaite D

Purpose: To determine the rates of lung cancer screening (LCS) utilization among patients with differing Chronic Obstructive Pulmonary Disease (COPD) clinical phenotypes by race and ethnicity.

Methods: In a retrospective analysis of the OneFlorida+ database, a statewide clinical research patient data repository, we examined LCS utilization among 60,292 patients diagnosed with COPD between 2016 and 2023. Latent class analysis (LCA) was used to identify distinct COPD clinical phenotypes, using demographic, clinical, and health utilization variables. LCS rates were assessed and stratified by race, ethnicity, and COPD phenotype.

Results: The cohort had a mean age of 64.92 years, with 52.7% female participants, and a racial/ethnic distribution of 74.66% non-Hispanic White individuals, 18.18% non-Hispanic Black individuals, and 3.03% Hispanic individuals. Five percent of the cohort were screened for lung cancer. The LCA identified five distinct COPD clinical phenotypes defined by progressively greater Elixhauser Comorbidity Index scores and therapies aligned with increasing COPD severity based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria. Screening rates were lowest in Class 3 (2.33%), a moderate-risk group with one comorbidity and GOLD grade B medications, and in Class 5 (3.2%), with the highest comorbidity scores and use of other medications typically prescribed for patients with more complications—disproportionately affecting non-Hispanic Black (54.9%) and Hispanic (44.8%) individuals compared to non-Hispanic White individuals (36.95%). In contrast, Class 1, with no comorbidities and GOLD group A medications, had LCS rates of 11.8%.

Conclusions: While lung cancer screening rates are appropriately lower among patients with severe COPD who are least likely to benefit, overall screening rates, especially in moderate-risk groups like Class 3, remain suboptimal. The disproportionate representation of racial/ethnic minorities in the most severe COPD phenotype warrants further investigation into the causes of this distribution and disparities in access and care.

159-T

Early-Life Risk Factors and Higher-Grade Prostate Cancer

Lucas LA, Mucci LA, Wang M, Giovannucci EL, Stopsack KH

Purpose: Risk factors for high-grade prostate cancer sometimes differ from those for fatal prostate cancer, even though Gleason score is a strong predictor of survival. Many epidemiological studies consider only low-grade and high-grade cancer as separate outcomes without fully leveraging the information contained in ordinal Gleason grade groups.

Methods: We examined the association between prostate cancer risk factors that may impact earlier in life and prostate cancer diagnosis, subclassified by Gleason grade group among men enrolled in the prospective Health Professionals Follow-up Study from 1986. Gleason score from diagnostic biopsy was examined as an ordinal outcome in 5 grade groups. We conducted cause-specific Cox regression to estimate the hazard ratio (HR) between exposures and prostate cancer by Gleason grade group, adjusting models for other risk factors. The slope of the HRs per each Gleason score group was calculated using dose-response meta-regression.

Results: Of 48,423 men included in our study population, 7,894 were diagnosed with prostate cancer over 24 years median follow-up through 2018. The association between African American vs. White race and prostate cancer was somewhat stronger for cancers with higher Gleason grade groups compared to lower Gleason grade groups (Gleason grade group 5: HR 1.15, 95% CI 0.37, 3.60; Grade group 1: HR 0.95, 95% CI 0.66, 1.36). The HR for prostate cancer among those with a family history of prostate cancer compared to those without a family history was stronger for lower-grade cancers (Gleason grade group 1: HR 1.74, 95% CI 1.54, 1.96; Grade group 5: HR 1.41 95% CI 0.90, 2.21). This association was possibly explained by family history leading to more PSA screening; among highly screened men, the association of family history with prostate cancer diagnosis did not show differences by grade group. Smoking, body type during adolescence, and height showed no major differences by Gleason score.

Conclusion: We did not observe strong evidence of etiologic heterogeneity by Gleason grade group for prostate cancer risk factors.

160

Follow up Clinical Actions among Black Women upon Receipt of Cancer Genetic Research Results

Wang, C, Trevino Talbot, M., Ruderman, M, Flynn, M, Cabral, J, Shinde, M, Palmer, J, Bertrand, K

Genetic testing for hereditary cancer can yield information on cancer risk and actionable steps that individuals can take to reduce their risk. As part of an ongoing study returning breast cancer genetic research results to women in the Black Women's Health Study, we examined participant actions taken within 6 months of receipt of genetic research results including the following: 1) communication of results to healthcare providers, 2) consultation with a local genetics professional (such as a genetic counselor), and 3) additional genetic testing and related findings. Among the 513 women who received results, 20 (4%) had a positive (pathogenic/likely pathogenic variant) result, 475 (93%) had a negative (benign) result, and 18 (3.5%) had a variant of uncertain significance (VUS)/complex result. At six months following receipt of genetic research results, 184 women (36%) reported that they had shared their results with their healthcare provider and 141 (27%) indicated they planned to share. Those who received positive results were more likely to share results compared to those receiving either negative or VUS/complex results (75% vs 34% vs 39% respectively; $p<0.001$). Ten percent of women with positive results and 1% with negative results consulted with a genetic counselor. Clinical genetic testing was reported by seven participants (1%) at 6-month follow-up (all with negative research results). Overall, the women in our study were inclined to share results with their healthcare provider, especially if the test was positive. Notably, some with negative results also shared, which led to additional genetic testing in a few cases. Among women with negative results and no plans to share, 37% had a personal history and/or strong family history (≥ 2 first-degree relatives affected) of breast cancer. We will continue to monitor follow-up activity with another survey at 12 months, including among those with a personal and/or strong family history of cancer who would benefit more from sharing results with providers.

161-T

Genes that Affect DNA Repair and Calcium Metabolism Predispose to Malignant Mesothelioma

Novelli F, Yoshikawa Y, Vitto VAM, Modesti L, Pastorino S, Misturo E, Kricek F, Onuchic JN, Bononi A, Giorgi C, Pinton P, Yang H, Carbone M

Mesothelioma, an aggressive cancer often caused by exposure to asbestos, is one of the malignancies currently seen with increasing frequency in younger patients (1). We have sequenced and analyzed the DNA of 61 patients who developed mesothelioma at young age (55< y old) and who had no evidence of asbestos exposure. By using Whole Exome Sequencing (WES) and digital multiplex ligation-dependent probe amplification (digital-MLPA) (2, 3), we discovered that ~1.8% of all mesothelioma patients and 4.9% of those younger than 55, carry rare pathogenic germline variants of the BRCA1 associated RING domain 1 (BARD1) gene. We performed functional assays in primary fibroblasts obtained from a patient carrying a heterozygous BARD1 mutation. We found that these cells had genomic instability, reduced DNA repair, and impaired apoptosis. Studying underlying signaling pathways, we found that BARD1 interacts with p53 and SERCA2 modulating calcium signaling and apoptosis. Our study elucidated mechanisms of BARD1 activity and revealed that heterozygous germline BARD1 mutations favor mesothelioma development in young patients and increase the susceptibility to asbestos carcinogenesis. These mesotheliomas are significantly less aggressive compared to asbestos-caused mesotheliomas. These patients experience significantly prolonged survival up to 20+ y and they require tailored screening and personalized therapeutic approaches.

162

Hereditary Cancer Prevention Practices among US Obstetricians and Gynecologists

Makhnoon S, Bereket S, Fisher H, Mersch J

Purpose: Primary care providers such as obstetricians and gynecologists (Ob-Gyns) play an important role in hereditary cancer prevention as they see patients more frequently than specialists and are well positioned to provide preventive cancer care. A growing number of Ob-Gyns already offer genetic tests - many through point-of-care testing - a understudied model of care delivery. To understand how Ob-Gyns contribute to and interact with hereditary cancer prevention, we evaluated the practices and perspectives of a national sample of Ob-Gyns.

Methods: We administered a cross-sectional survey to a national sample of Ob-Gyns identified from the AMA Masterfile in October 2024. We measured practices around hereditary breast and ovarian cancer prevention, counseling for and experience with testing, and responses to three case examples: (1) hereditary cancer genetic testing, (2) variant of uncertain significance, and (3) reclassified result. Descriptive analysis was used to summarize results.

Results: To date, 258 Ob-Gyns completed the survey: 43% worked in community medical setting and 39.9% had been in practice for >20 years. In the past 12 months, Ob-Gyns ordered a median of 120 non-invasive prenatal genetic tests, 100 carrier screening tests, but fewer than 5 targeted tests with breast or ovarian cancer genes or panel tests. In response to how often they believe that other Ob-Gyns recommend genetic testing to their eligible patients, respondents were split between almost never (49.6%) and almost always (50.4%). Still, 31% had received a report with a reclassified result themselves and most (58%) reported discussing the potential for reclassified results to patients. Only 6.2% responded correctly to all three cancer genetics related case examples - 61.6% responded correctly to the first, 21.7% to the second, and 60% to the third case example.

Discussion: We found that although guidelines from the American College of Obstetrics and Gynecologists recommend that Ob-Gyns perform hereditary cancer risk assessment, implementation gaps exist. A possible underutilization of hereditary cancer genetic tests combined with incorrect answers to case scenarios suggest the need to for tailored implementation strategies to narrow the practice gap.

163-T

HERSTORY: Hereditary Screening and Research for Selection and Analysis of Oncology Risks in Women

Rodriguez, VE; Chang, VY; Lester, J; Niell-Swiller, M; Ocampo, J; Iwuh, T; Arneson, A; Boutros, PC; Karlan, BY

Purpose: The HERSTORY study aims to understand and quantify the genetic, environmental, socio-economic, and other determinants of cancer in women with a family history of cancer, with a primary focus on underrepresented minority women. Here, we report on preliminary results from the HERSTORY study, focusing on rates of germline variants that are pathogenic, likely pathogenic, and of uncertain significance by race/ethnicity.

Methods: Participants were identified and recruited from ATHENA breast health registry and electronic medical records at UCLA Health. Inclusion criteria were women aged 35 and older, with a family history of any cancer, who identified as an underrepresented racial/ethnic minority. Recruitment is ongoing with a target study population of 5,000 with 75% comprised of underrepresented minority women. Descriptive analyses on multigene genetic testing results by race/ethnicity were conducted.

Results: Enrollment began 2023/08/30. As of 2024/09/25, 196 women had enrolled and 131 have completed genetic testing. Overall, 39% of participants had germline variants that were pathogenic/likely pathogenic and of uncertain significance, and these varied by self-identified race and ethnicity. Among those with pathogenic/likely pathogenic variants (n=11), 45.5% self-identified as Black, 36.4% as Hispanic/Latina, and 18.2% as Asian or Pacific Islander. Among those with variants of uncertain significance (n=66), 33.3% self-identified as Black, 31.2% as Hispanic/Latina, 18.2% as Asian or Pacific Islander, 9.1% as Multiracial, 3% as American Indian/Alaska Native, and 5% had unknown race/ethnicity.

Conclusions: These preliminary results suggest preemptive germline genetic testing program targeting underrepresented minority populations is feasible and underscore the need for access amongst racial/ethnic minority groups. Future research from this study will utilize annual questionnaires among those with genetic predispositions to cancer to assess engagement in cancer screening practices and other risk reduction behaviors, financial implications of cancer screenings, and cascade genetic testing for other family members.

164

Increased Treatment Referrals Post-Introduction of Human Papillomavirus-based Cervical Cancer Screening and Risk and Rates of Subsequent Adverse Obstetric Outcomes

Gottschlich A, Hong Q, Smith LW, Proctor L, Gondara L, Alam S, Cook D, Franco EL, Krajden M, Lee M, Martin RE, McClymont E, Melnikow J, Peacock S, Stuart G, Van Niekerk D, Ogilvie GS

Purpose: Transitioning from cytology to human papillomavirus (HPV) cervical cancer screening identifies more precancer and thus increases treatment. Cervical precancer treatment may be associated with adverse obstetric outcomes in subsequent pregnancies. We examined risk of preterm birth (PTB) and low birthweight (LBW) among those treated for cervical precancer after HPV screening and compared rates of treatment, PTB, and LBW between an HPV- and a cytology-screened group.

Methods: Women who received HPV cervical cancer screening and follow-up in a Canadian randomized trial were linked to province-wide perinatal registry; those with a singleton live birth after trial screening (index birth) were included in this analysis (N=1,765). Adjusted odds ratios (aORs) were calculated comparing risk of PTB (gestational week <37) and LBW (birthweight <2500g) by precancer treatment status prior to index birth. Crude rates of treatment referral, PTB, and LBW were compared between the analytic cohort (HPV group) and the general population of the province, who receive cytology screening (cytology group).

Results: Risk of PTB and LBW was non-significantly higher in treated women (PTB: aOR=1.32 (0.63-2.80); LBW: aOR=1.33 (0.50-3.55)). In the HPV and cytology groups, 1.5% and 0.6% were recommended for cervical precancer treatment, respectively. Rates of PTB were 9.1% and 10.5% and LBW were 4.8% and 6.1% in the HPV and cytology groups, respectively. In the HPV cohort, cervical interepithelial neoplasia grade 2 (CIN2) and grade 3 or higher (CIN3+) rates were similar, however in the cytology cohort twice as many CIN3+ were detected compared to CIN2.

Conclusions: While not statistically significance, findings suggested a potential elevated risk of PTB and LBW after treatment for cervical precancer. HPV screening led to more treatment compared to cytology, yet overall rates of PTB and LBW were similar across groups. We propose that HPV cervical cancer screening identified precancerous lesions at earlier stages, leading treatments that are less damaging to the cervix and cause less increased risk of future preterm births and low birth weight. This was suggested by differing distributions of CIN2 and CIN3+ across cohorts; further work is needed to confirm this hypothesis.

165

Knowledge, Perceived Benefits, and Screening Preferences Regarding Lung Cancer Screening among Primary Care Patients in a Large Integrated Health System

Tan NQP, An J, Hernandez M, Rogova A, Lowenstein LM, Hoffman RM, Volk RJ, Kinney AY

Purpose: We evaluated screen-eligible patients' knowledge and perceived benefits of lung cancer screening (LCS), and LCS preferences.

Methods: We used baseline data from an ongoing trial (TELESCOPE Study) where intervention arm participants attended a virtual decision coaching and navigation session conducted by a navigator prior to a primary care visit. Participants were recruited from a large integrated health system using Epic. The inclusion criteria were: 1) eligible for LCS using the Centers for Medicare & Medicaid Services criteria (i.e., age 50-77, currently smoke or quit less than 15 years ago, at least a 20 pack-year smoking history), 2) speak English, and 3) scheduled for a non-acute care visit with a study clinicians. Enrolled participants completed a baseline survey assessing LCS knowledge (13 items), perceived benefits (6 items), and preferences (1 item asking if participants preferred to screen, not to screen, or were unsure).

Results: Our analysis included 222 participants, of which 57.7% were female, 70.7% were White, 46.2% currently smoke and 53.8% formerly smoked, with 38.1 and 39.9 mean pack-year smoking histories respectively. The mean percentage knowledge score was 26.6% (SD=17.0%, median=23.1%). Only 1 participant (0.5%) knew all the reasons to stop screening; 78.8% did not know that screening stops if the person has quit smoking for more than 15 years, but 89.2% were aware that a negative LDCT scan is not a reason to stop screening. Most were unaware that majority of people with an abnormal LDCT scan will not have lung cancer (n=7, 3.2% correct) and the extent to which LCS lowers lung cancer mortality (n=12, 5.4%). There was an overall high level of agreement about the benefits of LCS (M=3.3, SD=0.6, range 1-4). In addition, most patients indicated a preference for LCS (n=143, 63.6%), while 30.7% (n=69) were unsure, and 5.8% (n=13) preferred not to be screened.

Conclusions: Our findings show that overall knowledge of LCS was low, in line with findings from other studies, indicating a need for greater LCS education among patients at high risk of lung cancer. Despite lack of LCS knowledge, participants viewed LCS favorably and were willing to be screened. Our study will assess if the TELESCOPE intervention impacts these findings.

166

Law Mandating Insurance Coverage for Breast Supplemental Screening

Noor S, Mack E, Sore R, Ehsan E, McDonald ES, Conant EF, McCarthy AM

Purpose: We evaluated the impact of a statewide insurance policy change in Pennsylvania (PA) on breast MRI screening among women with dense breasts who are at elevated risk for breast cancer and for having a breast cancer missed by mammography.

Methods: We examined trends in breast MRI screening after a statewide law mandating insurance coverage of supplemental screening for patients with dense breasts was passed in PA and took effect in 2021. The study cohort included adult women who underwent mammography screening at Penn Medicine from 2021-2023, with no prior history of breast cancer, who had a negative or benign mammogram assessment, and had dense breasts, defined as heterogeneously dense or extremely dense according to the Breast Imaging Reporting and Data System (BI-RADS). We examined the odds of screening MRI within one year using a mixed-effects model adjusted for year, age, race, mammography site and breast density as covariates. To account for women having multiple mammograms in the timeframe, patient id was included as a random effect.

Results: Among 38,390 screening mammograms among women with dense breasts, the proportion receiving screening MRI within one year of a negative mammogram was 2.3% in 2021, 1.9% in 2022 and 5.8% in 2023 ($p<0.001$). The odds of screening MRI was not significantly different in 2022 compared to 2021 (OR=0.87 95% CI 0.74-1.02) but increased substantially in 2023 (OR=2.61 95% CI 2.27-3.01). Black women were significantly less likely to receive screening MRI compared to white women (OR=0.67 95% CI 0.56-0.80). Patients with extremely dense breasts were more likely to receive breast MRI than patients with heterogeneously dense breasts (OR=1.89 95% CI 1.64-2.17). We observed variation in MRI receipt across mammography sites within in our health system, with patients seen in our suburban mammography site having higher odds of MRI than patients seen in our main urban site (OR=1.26 95% CI 1.09- 1.46).

Conclusions: There was no difference in MRI receipt in the first year after passage of a supplemental screening law, but a significant increase in the second year after the law took effect. Despite insurance coverage, overall utilization of breast MRI screening remains low, and significant racial disparities were obse

167

Modeling Supplemental Ultrasound Breast Cancer Screening Strategies for Women with Dense Breasts Targeted by Absolute Breast Cancer Risk

Sprague BL, Hampton JM, Lowry KP, Ichikawa L, Eavey J, O'Meara E, Kerlikowske K, Miglioretti DL, Tosteson ANA, Perry H, Trentham-Dietz A, Alagoz O

Purpose: We sought to estimate the long-term benefits and harms associated with supplemental ultrasound screening strategies for women with dense breasts tailored to women's estimated 5-year invasive breast cancer risk.

Methods: We used the University of Wisconsin Breast Cancer Simulation Model, a validated model within the Cancer Intervention and Surveillance Modeling Network. Screening scenarios for women aged 40-79 with dense breasts included mammography only vs. mammography plus supplemental ultrasound targeted to women whose estimated breast cancer risk exceeded defined thresholds. Key data inputs from the Breast Cancer Surveillance Consortium included estimated 5-year invasive breast cancer risk by breast density and age, and supplemental ultrasound screening test performance by breast density, age, and screening round. Risk groups were categorized according to percentiles within the overall distribution of risk among all women aged 40-79: low (<25th), average (25th-75th), intermediate (75th-90th), and high (>90th).

Results: Compared to biennial mammography alone, mammography plus supplemental ultrasound screening for all women with dense breasts averted 0.5 breast cancer deaths and added 16 life years gained, 1804 false positives, and 184 benign biopsies per 1000 women (incremental ratio of 3608 false-positives per death averted). Supplemental ultrasound screening targeted to women with dense breasts and intermediate or high breast cancer risk averted 0.2 breast cancer deaths and added 5 life years gained, 547 false positives, and 61 benign biopsies per 1000 women compared to mammography alone (incremental ratio 2735 false-positives per death averted). Targeting supplemental ultrasound screening to women with extremely dense breasts and intermediate or high breast cancer risk led to a more favorable benefit-to-harm ratios (incremental ratio 1182 false positives per death averted). Supplemental screening in the context of annual screening had less favorable benefit-to-harm ratios.

Conclusions: Biennial screening strategies targeting supplemental ultrasound to women with dense breasts based on elevated breast cancer risk yields improved benefit-to-harm ratios compared to mammography alone, particularly when focused on women with extremely dense breasts.

168

Prevention Plus - Cancer Screening Navigation and Beyond: Evidence from the Firefighter Cancer Initiative

Brown, E, Leavitt, A, Flores Quetant, D, Caban-Martinez, A, Kobetz, E, Schaefer Solle, N

Purpose: Firefighting is classified as Group 1, "carcinogenic to humans" by the International Agency for Research on Cancer (IARC), with increased cancer risk linked to occupational exposures and a lack of standardized cancer screening practices. In response, the Firefighter Cancer Initiative launched the CARES 2 Go (C2G) mobile clinic to enhance access to preventive care and facilitate early cancer detection; this study investigates the care provided by C2G since its inception.

Methods: From January 2022 to October 2024, C2G provided clinical services, including annual examinations and cancer screenings, on-site at Florida fire departments per the National Fire Protection Association 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments. Tests were entered based on an assessment of age, sex, and risk level. Descriptive statistics were generated from the electronic medical record summarizing screenings and referrals to care.

Results: Over a two-year period, C2G saw 704 patients and placed a total of 14,408 orders, with 33.4% related to cancer prevention and 66.6% addressing other healthcare needs. Most participants were male (77.3%), white (72.4%), Hispanic (43.9%), and aged 21-54 (81.5%). Within the 4,813 cancer prevention orders, 3,348 were blood tests to evaluate the thyroid (85.1%), prostate (10.8%), colon (3.6%), and liver (0.5%) along with 1,225 other diagnostic testing procedures. Additionally, 80 fecal globin by immunochemistry tests, 20 H. pylori antigen stool tests, and 58 colonoscopies were ordered. C2G navigated 82 referrals for further evaluation of cancer risk to specialists, primarily in dermatology (50.0%) and urology (22.0%). Among the 9,595 orders for other healthcare needs, 1,914 cardiac tests and imaging orders were placed, resulting in 17 cardiology referrals.

Conclusion: While the primary intention of C2G is to increase cancer screening among firefighters, many conditions that may increase cancer risk, such as metabolic syndrome and gastroesophageal reflux disease are identified, triaged directly on-site, and navigated. C2G addresses not only the significant cancer risks associated with firefighting, but also the broader range of health conditions associated with cancer.

169

Racial/Ethnic, Socioeconomic, and Geographic Differences in Age-based Breast and Colorectal Cancer Screening: Multiest Screeners, Singleest Screeners, and Non-screeners

Lui ML, Argov EL, Karr AG, Tehranifar P

Purpose: Adherence to screening guidelines for multiple cancers can optimize early cancer detection. We examined multiests, singleest, and non-screening patterns for breast and colorectal cancers across guideline-recommended age groups (50-74 for routine screening, 75+ for cessation/ shared decision-making) and associations with race, socioeconomic and geographic indicators.

Methods: We used 2022 nationally representative Behavioral Risk Factor Surveillance System data. Women with both breast and colorectal cancer screening in the past 1-2 years were categorized as multiest screeners, with one cancer screening as singleest screeners, and those with neither as non-screeners. Multinomial logistic regression examined associations of screening patterns with race/ethnicity, metropolitan status, having a health care provider, education level, and marital status, stratified by age group ("younger": 51-74 years vs. "older": 76+ years; the lag year to account for aging into and out of screening recommendations).

Results: 40%, 49% and 11% of the younger age group and 25%, 46%, and 29% of the older age group were multi-screeners, single-screener, and non-screeners, respectively. In younger women, as compared to Non-Hispanic (NH) White women, NH Black women (OR:1.9, 95% CI:1.6-2.3) and Hispanic women (OR:1.3, 95% CI:1.0-1.7) were more likely to be multiest screeners vs. non-screeners whereas NH American Indian/Alaska Native (AI/AN) women (OR:0.6, 95% CI:0.4-1.0) were less likely to be multiest screeners. In older women, NH Black women (OR=1.6, 95% CI: 1.2-2.3) and NH AI/AN women (OR=2.8, 95% CI: 1.3-6.0) were more likely to be multiest screeners vs. non-screeners than NH White women. Lower socioeconomic resources (e.g. not metropolitan, lower education) were associated with lower likelihood of screenings for both age groups.

Conclusion: Findings suggest opportunities to increase breast and colorectal cancer screening in age groups where routine screening is recommended, while reducing it among those who have aged out of guidelines. Racial/ ethnic, socioeconomic and geographic variations highlight population groups that may benefit from targeted efforts to promote adherence to multiple cancer screenings.

171

Small Area-Estimation for Up-to-Date Mammography Screening in the United States: Geographic and Racial Disparities in Mammography Screening, 2015 - 2022

Moore JX, Polland E, Howard S, Johnson R, Williams L, Adegboyega A, Chen J, Cortes J, James A

Mammography screening (MAM) reduces breast cancer mortality by at least 20%, but racial disparities persist. Few studies provide small-area estimates of screening rates across the U.S., and racial differences show mixed results. This study aims to identify regions with up-to-date screening and examine variations by geography, race, and ethnicity. MAM screening data for women aged 40+ from 2015-2022 was obtained from the Behavioral Risk Factor Surveillance System. Census tract estimates from 2020 were used to weight gender, race/ethnicity, income, and age. The PARIS (Probability of MAM screening given, Age, Race, Income, State) model, a multilevel logistic regression, generated synthetic estimates of screening uptake by census tract. Regional screening differences were analyzed by U.S. Census Bureau regions and divisions. Overall MAM screening was 55.98% (SD = 2.07; F(3, 72429) = 2886.81, p < .0001). Screening rates were highest among non-Hispanic Black women (60.78%) and lowest among Asian women (48.68%). Regionally, the West had the lowest screening rate (54.74%), and the South had the highest (56.55%). Further analysis of Census Bureau divisions was conducted. Overall, screening among the whole sample was 55.98% (SD = 2.07; F (3, 72429) = 2886.81, p < .0001). When examined by race, the greatest screening rates were among non-Hispanic Black women (M = 60.78, SD = 3.11) and least among Asian women (M = 48.68, SD = 3.15). Among four US Census Bureau regions, the West region had the lowest rates of MAM screening among women (M = 54.74, SD = 1.85) while the South had the highest rates (M = 56.55, SD = 2.18; F(3, 72429) = 2886.81, p < .0001). Further geographical parsing indicated the lowest screening rates in the West Pacific among the 9 US Census Bureau divisions (M = 54.53, SD = 1.81) while the East South Central division had the highest rates of mammography screening (M = 56.94, SD = 2.10; F(8, 72429) = 1360.60, p < .0001). The current study elucidated significant differences in screening by race and place. These results suggest that Black women and women living in the South have higher up-to-date MAM screening compared to other women. Thus, the existing inequities in breast cancer outcomes may be explained by differences in the cancer care continuum.

172-T

The Association of Anemia with Gastric Intestinal Metaplasia Prevalence in an Helicobacter Pylori-Positive Clinical Population

Patterson SC, Emerson J, Brown H, Alagesan P, Labriola C, Zuzul R, Taylor AO, Mebuge D, Salama N, Min-Htike WY, McCall S, Wang F, Garman KS, Epplein M

In this clinic-based cross-sectional study, we sought to determine if, among individuals infected with Helicobacter pylori (Hp), a history of anemia was associated with prevalence of gastric intestinal metaplasia (GIM), a gastric cancer precursor lesion. This project uses data from the Gastric Immune Response and Cancer Interception (GRACE) retrospective cohort, comprised of Black or White adult patients who were diagnosed with Hp at an upper endoscopy with biopsy at Duke University between 2015-2019. Individuals who were undergoing active cancer treatment or lacked sufficient iron and anemia lab testing were excluded, resulting in 478 Hp+ patients for the present analyses (331 Hp+ patients without GIM and 147 Hp+ patients with GIM). Anemia and iron deficiency (ID) status were assessed through electronic health record chart abstraction. Logistic regression models adjusted for age were used to determine odds ratios (OR) and 95% confidence intervals (CI). Compared to Hp+ individuals without anemia, Hp+ individuals with anemia were at increased risk of having GIM (OR, 1.61; 95% CI, 1.05-2.45). When separating anemic patients by their ID status, the association remained significant for iron deficiency anemia (IDA), but not for anemia without ID (OR, 1.66; 95% CI, 1.02-2.69, and OR, 1.48; 95% CI, 0.83-2.62, respectively). This association between IDA and GIM was especially strong among patients with an Hp diagnosis prior to their Hp diagnosis at index endoscopy (OR, 4.11; 95% CI, 1.10-15.32), compared to those without a prior Hp diagnosis (OR, 1.39; 95% CI, 0.82-2.37), although this did not result in a statistically significant interaction (p=0.15). Further stratification by race yielded no significant differences in the association of anemia with GIM among Black versus White patients. Our results suggest that, among our racially diverse cohort of Hp+ patients, IDA is predictive of an increased likelihood of prevalence of GIM. This study provides evidence supporting the use of IDA as a clinical indicator for Hp+ GIM, suggesting that this could be a high-risk group that should be considered for testing and monitoring for GIM by endoscopy procedure.

173-T

The Influence of Diabetes on Cancer Risk and Beliefs: Results from the Health Information National Trends Survey (HINTS)

Hu J, Hong YR, Gururaghavendran R, Smith R, Rivero-Mendoza D,Mkuu R

Purpose: Diabetes and cancer share common preventable risk factors of diet and physical inactivity. People with diabetes have been shown to have an increased risk of developing some cancers (bladder, breast, colon and rectum, endometrium, and liver). However, there is limited research comparing cancer history among people with diabetes to those without diabetes. Additionally, there is limited knowledge regarding the cancer beliefs of people living with diabetes.

Methods: We utilized data from the nationally representative Health Information National Trends Survey HINTS 6 (2022). Diabetes and cancer history were self-reported. Cancer beliefs included questions: How worried are you about getting cancer? Compared to other people your age, how likely do you think you are to get cancer in your lifetime, etc.? Using survey design-adjusted analysis, we compared the odds of reporting cancer history among people with diabetes and those without diabetes while adjusting for sociodemographic factors. We also compared the cancer beliefs of individuals with and without diabetes, focusing on those without a cancer history.

Results: The weighted study sample included 213,250,309 individuals (mean age 48.4), of which 2.5% were diagnosed with both cancer and diabetes. Diabetes history, age (<65 vs. ≥65), gender, race and ethnicity, educational level, marital status, and insurance status were statistically significant associations with cancer history. Participants with diabetes had a 1.39-fold increased risk of reporting cancer history (aOR [95% CI, 1.0, 1.93], p = 0.047). Compared to those without diabetes, individuals with diabetes were more likely to agree that there is not much they can do to lower their chances of getting cancer (27.9% vs. 35.4%; aOR [95% CI, 0.86 1.57], p = 0.04).

Conclusions: Our study findings support other research that individuals with diabetes have a higher risk of having a cancer history. Our study adds to the literature by showing that individuals with diabetes believe that there is not much that can be done to lower the chances of getting cancer. Our findings call for interventions to educate people living with diabetes on cancer prevention.

174

The Vanguard Study: A Cancer Screening Research Network Feasibility Study of Multi-Cancer Detection Tests

Anderson GL, Henderson LM, Ritzwoller DP, Lee JK, Nana-Sinkam P, James AS, Neslund-Dudas C, Doescher M, Triplette M

Purpose: Despite the promise of multi-cancer detection (MCD) tests, little evidence supports their use. Large-scale randomized controlled trials (RCT) that engage diverse communities are needed to assess MCD impact on cancer mortality. The NCI-sponsored Cancer Screening Research Network (CSRN) Vanguard trial, using approaches focused on equity, inclusion, and diversity, will provide information needed to design a full-scale RCT.

Methods: The CSRN Vanguard trial is a three-arm RCT of two MCD assays and a control group. Adults ages 45-75 without cancer will be eligible. Nine US ACCESS Hubs will use multi-modal recruitment efforts to enroll diverse populations. Blood samples (baseline and year 1) and surveys assessing cancer risk, screening history, anxiety, and cancer worry are required. All participants will be encouraged to undergo standard-of-care cancer screening. Participants assigned to an intervention arm will have a MCD test at baseline and year 1. Those receiving abnormal MCD results will complete diagnostic workups with study support. The ability, timeliness, and procedures required to reach diagnostic resolution will be monitored. Active follow-up for cancer will continue for at least two years, with longer-term surveillance planned. Primary outcomes are feasibility and equitable recruitment. Other outcomes include assay performance, especially false positive rates, and adverse effects of workups.

Results: Up to 24,000 participants will be accrued over two years, beginning in early 2025. Accrual goals are set to enhance diversity. ACCESS Hubs will use recruitment and retention strategies tailored to their local setting and the communities they seek to engage. Issues in protocol development included blinding of assignments, post-randomization confounding by differential standard-of-care screening or external MCD testing, management of abnormal MCD findings, and adherence to follow-up.

Conclusions: MCD tests raise new challenges for the much-needed RCTs to evaluate them. The Vanguard trial is critical to addressing feasibility and ensuring rigorous design and implementation of future full-scale RCTs. Our intentionally inclusive approach which focuses on equity and diversity will generate key findings that are valid and relevant for subsequent trials.

175

Unlocking the Potential of Lung Cancer Screening: A Culturally Tailored Training Initiative to Raise Awareness in Underserved Communities

Truehart J, Liu EZ, Fraser M, Gonzv°lez E, Le L, Lin Y, Ibrahim S, Zhou K, Ma GX, Yeh M-H, Tan Y

Purpose: Lung cancer is the leading cause of cancer deaths in the U.S., responsible for about 25% of all cancer fatalities. Early detection through regular screening improves outcomes, especially in high-risk groups. However, screening disparities persist among racial/ethnic minorities, including African American, Hispanic, and Asian American populations.

Methods: We trained 17 community health workers (CHWs) in lung cancer knowledge and health communication. CHWs and project staff from an academic institution and a cancer center conducted 31 workshops at 10 community-based organizations. Pre- and post-workshop surveys assessed participants' lung cancer knowledge, including screening methods and risk factors. Paired sample t-tests were used to analyze changes in knowledge.

Results: Among 113 participants (mean age 42.0 years, $SD = 20.9$), most were male (72.6%), non-Hispanic (93.8%), and Black (55.8%). Significant improvements were observed in understanding lung cancer deaths linked to smoking ($p < .0001$), lung cancer's ranking as a leading cause of cancer deaths ($p < .0001$), and methods of screening ($p < .0001$). Awareness of screening benefits, recommended screening frequency, and risk reduction strategies also increased.

Conclusion: Educational workshops delivered by CHWs proved highly effective in boosting lung cancer knowledge among underserved minority populations. By enhancing awareness of lung cancer risks, screening guidelines, and preventive measures, these interventions unlock the potential to address longstanding disparities in screening uptake and health outcomes. Expanding such programs offers a valuable opportunity to mitigate the burden of lung cancer in vulnerable communities.

176-T

What Cancer across the Tree of Life Teaches us about Preventing Cancer in Humans

Compton, Z.T.

Cancer is widespread across multicellular species, but what explains the differences in cancer prevalence among them? Studying cancer from an evolutionary perspective can provide important theoretical and practical insights, yet little is known about cancer prevalence in species beyond humans and their companion animals. By analyzing veterinary necropsy records, we can begin to identify the drivers behind variations in cancer risk across the tree of life. Using 16,049 necropsy records from 292 species of zoo-managed animals, we found that neoplasia and malignancy prevalence increase with adult mass and somatic mutation rate but decrease with gestation time. Additionally, we identified dozens of species with remarkably low cancer risk, demonstrating that evolution has discovered mechanisms for suppressing cancer in a wide variety of species. Understanding why certain species exhibit particularly high or low levels of cancer could lead to better insights into cancer syndromes and novel strategies for cancer management and prevention.

177

What's at Risk? Advancing Equitable Implementation of Risk-Based Approaches to Breast Cancer Prevention

Austin, JD, Jenkins, SM, Raygoza Tapia, JP, Soto, CS, Zahrieh D, Garcia, DO, Allyse, MA.

Purpose: Equitable implementation of risk-based, precision approaches to population-level breast cancer (BC) screening hinges on understanding how women of color understand and conceptualize BC risk.

Methods: This cross-sectional survey study aims to characterize and identify differences in factors driving BC risk perceptions among a convenient community sample of 318 Hispanic and Non-Hispanic Black (NHB) women ages 18-50 recruited between March 2023 and June 2024 from Arizona and Florida. Items assessed how much 18 factors increased BC risk (a lot vs. a little/not at all/ not sure) and one's perceived risk of developing BC compared to other women their age in the U.S, or comparative risk (much higher, about the same, much lower). Analyses were restricted to those with no history of BC or known genetic mutation (N=280, mean age 38, 69% Hispanic). Chi-square assessed differences by race/ethnicity and ordinal logistic regression compared the odds of perceiving one's comparative risk as higher for each risk factor.

Results: Only 14% perceived their comparative risk as much higher with no significant differences observed by race/ethnicity. Family history was the top BC risk factor overall and by race/ethnicity, but Hispanic women endorsed sun exposure (p = .02), stress (p =.04), and being hit in the breast (p = .03) at significantly higher rates compared to NHB women. Adjusting for age, race/ethnicity, education, and family history, endorsing family history as a risk factor was associated with significantly greater odds of perceiving one's comparative risk as higher (OR 1.8; 95% CI 1.1, 3.1, p = .03). Stratifying by race/ethnicity, alcohol use (OR 1.9; 95% CI 1.0, 3.4, p =.04) and family history (OR 2.0, 95% CI 1.0, 4.0, p = .04) were significantly associated with greater odds of perceiving one's comparative risk as higher among Hispanic women. No association between risk factors and comparative risk was observed among NHB women.

Conclusion: Family history resonated as a top BC risk factor, but factors increasing BC risk and their relationship to one's perceived risk differed by race/ethnicity. Strategies to equitably implement risk-based approaches should be tailored to account for racial/ethnic differences in knowledge and risk perceptions.

Global Cancer Research

178

Assessing Geospatial Barriers for Breast Cancer Services at a Referral Hospital in Mwanza, Tanzania

Friebel-Klingner, T; Iyer, H; Kirahi, M; Joo, E; Wagner, R; Masalu, N; Washington, L; Rositch, A; Kohler R.

Purpose: Tanzania has a high breast cancer (BC) mortality burden attributed in part to poor access to comprehensive cancer services. This study examines access to cancer care at Bugando Medical Center (BMC), the only referral hospital in the northern lake zone of Tanzania with a catchment area of six million women across eight geographical regions.

Methods: This prospective cohort included women presenting to BMC in Mwanza, Tanzania between 2019 and 2023. We calculated presentation rate (PR) as the number of women presenting to BMC with breast concerns per adult female population, and a BC PR as the number of BC cases out of the same population. We used descriptive statistics and binary logistic regression to depict and assess relationships between geospatial, demographic, and clinical variables.

Results: We collected data on 1,558 women with breast concerns presenting to BMC. Overall, the PR was 26.41 and the annual BC PR was 6.90. The median age was 45 years (range 18-92), 54% had insurance, and a median symptom duration of 6 months (IQR: 3-12) was reported. 26.1% (n=407) women were diagnosed with BC, 61.2% were benign, and 12.7% did not complete diagnostics. 64.1% of BC with pathology were late stage. Throughout the study, 27.2% women were lost to follow-up. For women living in Mwanza, the PR was 71.7 and annual BC PR was 13.83. For women living outside Mwanza, the PR was 16.36 and the BC PR was 5.36. Participants presenting from regions outside Mwanza traveled significantly further (mean 297.6 km vs. 3 km; p<0.001), were less likely to have insurance (48.4% vs. 60.4%; p<0.001), reported a longer duration of symptoms (9.6 months vs. 7.1; p<0.001), and were more likely to have been lost to follow-up (33.4% vs. 20.7%; p<0.001). We saw no difference in cancer stage (early versus late) at diagnosis by geographical region.

Conclusion: Findings indicate that living further from the referral hospital is associated with lack of insurance, longer symptom duration, and greater loss of follow-up. These factors may be contributing barriers to accessing cancer care in Tanzania, as indicated by the lower PR and annual BC PR for women living outside of Mwanza.

179

Barriers and Facilitators of Timely Breast Cancer Diagnosis and Treatment in Botswana

Wagner RB, Wester JR, Motladiile B, Dryden-Peterson S, Kohler RE

Purpose: We explored breast cancer survivors' care-seeking experiences in Botswana to understand factors influencing diagnosis because advanced disease is common and breast cancer mortality remains high.

Methods: We recruited survivors with non-metastatic disease from a national survivorship cohort. Semi-structured interviews covered experiences with symptom appraisal, initial diagnostic work-up, and treatment. Transcripts were translated and thematically analyzed by factors affecting intervals of the WHO Global Breast Cancer Initiative: early detection, timely diagnostics, and comprehensive management.

Results: 23 female participants were age 55 years on average. Over half (57%) were diagnosed at stage III. Key themes influencing delayed diagnosis included: low breast cancer symptom recognition, delayed diagnostic referrals, and problematic results communication. All participants presented at primary care clinics with symptoms (i.e., lump, discharge, pain) though they did not suspect cancer. Majority sought care multiple times before being referred for diagnostic evaluation. Transportation costs and equipment issues contributed to biopsy and imaging delays. Less than half received a diagnosis within 60 days. Few received counseling when learning of results, so many sought psychosocial support from family members and pastors. Of those who received biopsies before surgery, mean time from diagnosis to mastectomy was 139 days. Fear of mastectomy and cancer stigma were common, though most also received social support encouraging treatment initiation. Participants were interested in counseling from providers and peer survivors to better understand their diagnosis and anticipate consequences of treatment.

Conclusions: We identified multifactorial barriers to timely breast cancer diagnosis and treatment. Health system delays in diagnostic referrals and results exacerbated socioeconomic barriers to care. Future community cancer education must be coupled with provider capacity and health system strengthening. Robust counseling with navigation may better prepare and support patients while also promoting treatment initiation.

ASPO - Top Ranked Abstract

180-T

Breast Cancer Stigma in Rwanda: Community Members' Perspectives

Kabayundo J, Uwimana A, Mugisha N, Ndangurura D, Regnier D, Fehr A, Rugengamanzi E, Watanabe-Galloway S, Fadelu T

Background: Within the next five years, breast cancer is projected to surpass cervical cancer as the leading cause of cancer-related mortality among women in Sub-Saharan Africa. In Rwanda, despite the availability of treatment, breast cancer mortality-to-incidence ratio remains over 50%. Studies suggest that stigma significantly contributes to delays in seeking care, reluctance to undergo curative surgery, and poor adherence to treatment. However, breast cancer stigma in Rwanda remains understudied. This study explored perspectives on breast cancer and stigma elements, including its sources, influence on decision-making, and impact on care-seeking behaviors, among community members in Rwanda.

Methods: This qualitative study was conducted in June 2024, recruiting 45 men and 45 women from five health centers in Burera District, Rwanda. Participants engaged in focus group discussions (FGDs) lasting 60-90 minutes, conducted in Kinyarwanda. Semi-structured interview guides, informed by a literature review, were used to explore stigma-related domains based on the Health Stigma and Discrimination (HSD) framework. FGDs were audio recorded, transcribed, and translated into English. Data were analyzed using the Framework Method, with themes generated through an inductive and iterative coding process.

Results: Participants perceived breast cancer as a fatal and incurable disease. This perception enhances social isolation, with breast cancer patients often seen as "dying people" and facing discrimination in community associations. Participants also noted that family members, particularly husbands, may abandon breast cancer patients, believing the disease to be incurable. Cultural beliefs further reinforced stigma, with societal expectations of a "healthy" woman having two breasts, influencing events such as weddings and marriages. Compared to other diseases, breast cancer was seen as carrying more stigma, resulting in social isolation, poverty, and loss of family ties. Participants emphasized the need for increasing awareness and education within communities and families to reduce stigma.

Conclusion: Our results reinforce the need for community and family-focused interventions to address pervasive breast cancer stigma.

181-T

Global Cancer Burden Attributable to Modifiable Risk Factors: Smoking Prevalence

Shah D, Shah V, Shah K, Shah P, Seyyedsalehi MS, Boffetta P

Purpose: To estimate the global population attributable fraction (PAF) of cancer incidence and mortality due to tobacco smoking, further stratified by country, human development index (HDI) categorization, cancer types, gender and smoking status (current vs. former).

Methods: PAFs were estimated using the prevalence of cancer cases in 2022, and relative risks (RR) were derived from large-scale pooled analyses and comprehensive meta-analyses. Population estimates were obtained from the World Bank. Cancer incidence and mortality data (Global Cancer Observatory, GLOBOCAN) across various HDI groups for the year 2022 were used to estimate the number of cases attributable to tobacco smoking. The current and former smoking rates for 190 countries were extracted from the year 2000 (Global Burden of Disease, GBD) to allow for latency periods.

Results: Cancers with the highest global PAFs in current and former smokers for incidence (I) and mortality (M) were laryngeal (75.4%, I: n=140,000, M: n=78,000) lung (70.2%, I: n=1,720,000, M: n=1,290,000), pharyngeal (66.3%, I: n=130,000, M: n=61,000), oral cavity (39.7%, I: n=150,000, M: n=75,000), and bladder (37.9%, I: n=230,000, M: n=82,000), where n represents number of cases. Overall global cancer burden attributable to smoking was determined to be 11.2% with 16.6% for males and 5.2% for females. Total cancer burden in very high, high, medium, and low HDI countries was calculated to be 28.6%, 28.5%, 24.4%, and 16.6% respectively. Overall cancer burden for current and former smokers was calculated to be 9.5% and 1.7%, respectively. The countries identified as the highest risk for tobacco-related cancer incidence and mortality were Turkey, Bangladesh, Cuba, Serbia, and Montenegro, with total cancer burden calculated to be 34.2%, 33.3%, 32.7%, 32.0%, and 32.0% respectively.

Conclusions: Laryngeal, lung, pharyngeal, oral cavity, and bladder cancers had the highest cancer burden from tobacco smoking. Current smokers had higher cancer burdens than former smokers, while males had a greater cancer burden than females. Higher HDI countries reported increased cancer incidence and mortality rates than lower HDI nations. These findings underscore the need for targeted smoking cessation initiatives adapted to HDI and sex differences.

182-T

The Relationship Between Rural Residence and Cervical Cancer Screening in Ten Sub-Saharan Countries with Different National Screening Policies

Ndeke JM, Yeates K, Landsittel D

Purpose: Few sub-Saharan African (SSA) countries have a systematic cervical cancer (CC) screening program. Whether screening policy intervenes in the SSA consistently very low rural screening uptake is understudied. We examined CC screening uptake between urban and rural women aged 30-49 years in ten SSA countries (Burkina Faso, C√¥te d'Ivoire, Gabon, Ghana, Kenya, Madagascar, Mauritania, Mozambique, Senegal, and Tanzania) grouped based on whether a systematic population-based CC screening or human papilloma virus vaccination is active.

Methods: We used all the available survey data within the Demographic and Health Survey in SSA countries from 2020 onward. We selected women aged 30-49 who were asked if they ever tested for CC screening, whom we stratified by residence (urban/rural). Using country-specific survey design weights, we described other participant sociodemographic characteristics, conducted a Pearson chi-square test, then estimated the unadjusted odds ratios (OR) between place of residence and CC screening.

Results: Except in three countries, most participants were rural, but this consistently showed a statistically significant lower screening prevalence. Overall, Kenya women (with both screening and vaccination) reported higher CC screening prevalence at 27.1% and Mauritania participants (vaccination only) the lowest at 0.9%. However, with a 13.0% screening uptake, Mozambique showed a wider (18.7%) divide in uptake difference between urban and rural populations. Rural women were at 26% lower odds to be screened for CC in Senegal (vaccination only; OR 0.74 [95%CI 0.58, 0.95]) and 81% in Mozambique (screening only; OR 0.19 [95%CI 0.15, 0.23]). Six other countries fell in between, and no ORs are reported for Madagascar and Mauritania due to small numbers.

Conclusion: This study aimed to identify factors that may influence the association between place of residence and reported CC screening access in SSA countries, where rural women have lower reported rates of screening. No indication has emerged to help understand whether a country-specific screening policy would be associated with a reduction or closure of the screening gap between urban and rural women at risk for CC in these countries. Further analysis to explore other mediating factors is needed.

183

Adverse Health Outcomes among Childhood Cancer Survivors with and without Congenital Anomalies

Janitz AE, Qiu W, Schraw JM, Mostoufi-Moab S, Mirabello L, Stewart DR, Neglia JP, Turcotte LM, Bhatia S, Yasui Y, Armstrong GT, Lupo PJ

Purpose: We estimated the rate of chronic health conditions (CHCs), subsequent malignant neoplasms (SMNs), and mortality among five-year survivors of childhood cancer with and without congenital anomalies.

Methods: We included childhood cancer survivors with and without self-reported anomalies from the Childhood Cancer Survivor Study (n=22,247). Using Cox regression, we estimated hazard ratios (HR) and 95% confidence intervals (CI) of CHCs per the Common Terminology Criteria for Adverse Events from 1 (mild) to 5 (fatal) and SMNs comparing survivors by anomaly status. We calculated age-sex-calendar year-specific mortality rates and standardized mortality ratios (SMR) for survivors compared to the US population, stratified by the presence of anomalies.

Results: Among survivors, 16.9% (n=3,880) reported an anomaly. Survivors with anomalies had a higher rate of any CHC (grades 1-5 HR: 1.31, 95% CI: 1.23-1.39), severe CHCs (grades 3-5 HR: 1.42, 95% CI 1.28-1.58), and multiple CHCs (≥2 any grade HR: 1.36, 95% CI 1.27-1.46; ≥3 any grade HR: 1.49, 95% CI 1.37-1.63), compared to survivors without anomalies. Survivors with anomalies had increased rates for adverse outcomes across body systems (all p<0.001), including: hearing/vision/speech (HR: 1.37); urinary (HR: 1.42); hormonal/endocrine (HR: 1.24); heart/circulatory (HR: 1.35); digestive (HR: 1.49); and brain systems (HR: 1.42). Survivors with anomalies had an increased rate of SMNs: bone cancer (HR: 3.29, 95% CI 1.29-8.39); soft-tissue sarcomas (HR: 2.39, 95% CI 1.27-4.49); and melanoma (HR: 2.02, 95% CI 1.00-4.09). We observed no difference in all-cause mortality (SMR: 1.00) of survivors with anomalies relative to the US general population. However, survivors with anomalies had lower mortality due to recurrence or progression of the primary cancer diagnosis compared to those without anomalies (mortality rate: 0.64 vs. 0.90 per 1,000 person-years).

Conclusion: Cancer survivors with congenital anomalies had higher rates of adverse outcomes across body systems and increased risk of certain SMNs. All-cause mortality was not different than in the general U.S. population.

184

Association Between Sleep Quality and Sexual Satisfaction in Breast Cancer Survivors: Secondary Analysis of Prospective Longitudinal Data from a US-National Trial

Shaffer KM, Daniel KE, Wiseman KP, Ritterband LM, Mohr DC, Cohn W, Showalter SL, Chow PI

Purpose: To investigate the prospective relationship between sleep quality and sexual satisfaction among breast cancer survivors.

Methods: This is a secondary analysis of a US-national trial testing a suite of cognitive-behavioral mobile apps among breast cancer survivors with elevated anxiety and/or depressive symptoms (N=313; age M=52, 84% non-Hispanic White). After completing baseline, participants were randomized to either the intervention app or an educational control app. Follow-up assessments occurred 8 weeks, 6 months, and 12 months later. Sleep quality (Pittsburgh Sleep Quality Index; PSQI) and sexual satisfaction (Satisfaction with Sex Life Scale, SWSL) were measured at each assessment. Associations between survivors' PSQI and SWSL over time were examined using parallel process latent growth modeling via a structural equation model, controlling for survivor age, partner status, and study condition.

Results: The final model showed good fit (X2=27.06 (df=29), p=.57; CFI=1.00; SRMR=.026). Survivors' PSQI tended to improve over time (slope B=0.54, p<.001). There was an inverse association between baseline PSQI and its change (intercept-slope covariance B=-1.02, p=.01) such that survivors who reported worse initial sleep quality showed more sleep improvement over time. Similarly, SWSL also tended to increase over time (slope B=0.42, p=.001), with those reporting lower initial satisfaction also showing greater increases (covariance B=-1.74, p=.01). PSQI and SWSL were positively associated at baseline (intercepts' covariance B=4.13, p<.001), but there was no association between initial PSQI and change in SWSL over time or vice versa (ps>.05). Older and single survivors reported lower initial PSQI and SWSL (ps<.02), but there were no associations of covariates with change in these factors (ps>.12) and no differences between intervention and control groups (ps>.05).

Conclusions: Sleep quality and sexual satisfaction are concurrently related in breast cancer survivors. Survivors reporting concerns about one of these domains should be assessed for difficulties in the other. Sleep quality does not, however, predict later sexual satisfaction (nor vice versa), so intervening to improve one of these domains is unlikely to yield longer-term benefits in the other.

185-T

Association Between Sleep Quality and Sociodemographic, Clinical, and Psychosocial Factors among Metastatic Breast Cancer Survivors

Hery CM, Peng J, Davenport AP, Naughton MJ

Purpose: To examine the association between self-reported sleep quality and sociodemographic, clinical, and psychosocial factors among metastatic breast cancer (MBC) survivors.

Methods: 232 patients from the Ohio State University Stefanie Spielman Comprehensive Breast Center, who had been diagnosed with MBC for ≥1 year, were asked to complete a one-time, online survey to assess their quality of life, self-rated health, symptoms, supportive care needs, and reflections on their cancer diagnosis and treatment. Participants were asked to rate their sleep quality on a scale of 0 (extremely bad) to 10 (as good as it can possibly be). A multivariate generalized linear model (GLM) was used to determine sociodemographic (age, race, education, income, rural/urban residency), psychosocial (self-rated health, quality of life, social support, anxiety), and clinical factors (time since diagnosis, fatigue, pain) associated with patients' sleep quality.

Results: Patients were on average 59.6 years old (¬ffl12.7), and 5.3 (¬ffl4.8) years from their diagnosis with MBC. Most were non-Hispanic and white (91%), had a college education (51.7%), and over a quarter resided in rural counties (28%). Approximately 53% rated their quality of life as very good or excellent. The average sleep quality score was 5.9 points (¬ffl2.4) out of 10 points possible. In multivariate models, pain and fatigue were the only variables that were significantly and negatively associated with sleep quality after controlling for age, time since diagnosis, rural/urban residency, self-rated health, overall quality of life, and anxiety. Higher levels of pain (β=-0.19, p=0.03) and fatigue (β=-0.32, p=0.0006) were associated with poorer sleep quality.

Conclusions: Understanding the unique experiences of MBC survivors is important as survivorship rates are increasing with longer survival. Adverse physiological effects of poor sleep, such as immune system suppression, inflammation, and treatment interference, can worsen cancer outcomes. Therefore, determining common symptoms (such as pain and fatigue) with potential for intervention are important to improving sleep quality among MBC survivors.

186

Association of Breast Cancer Polygenic Risk Scores and Survival in a Cohort of Black Breast Cancer Survivors

Zeinomar N, Fiorica P, Perlstein M, Satagopan J, Hong CC, Demissie K, Qin B, Ambrosone C, Yao S, Bandera EV

Purpose: Polygenic risk scores (PRS), a quantitative measure of the genetic risk burden of disease over multiple susceptibility variants, have been associated with increased breast cancer risk; however, the association with prognosis is less clear. The purpose of this study is to examine if a breast cancer PRS improves risk prediction for survival in Black breast cancer survivors, who have the highest rate of breast cancer mortality of all racial and ethnic groups in the United States.

Methods: We utilized data from 1597 women with genomic data enrolled in the Women's Circle of Health Follow-up Study (WCHFS), a longitudinal study of Black breast cancer survivors in New Jersey, to examine whether the PRS was associated with overall survival and breast cancer-specific survival. We calculated PRSAABCG, developed using the African Ancestry Breast Cancer Genetic (AABCG) consortium, to estimate breast cancer risk in women of African ancestry. We estimated hazard ratios (HRs) and 95% confidence intervals (CIs) using multivariable Cox proportional hazards models and Fine-gray models, adjusted for age at diagnosis, genetic ancestry, tumor size, nodal status, grade, estrogen receptor (ER), progesterone receptor, human epidermal growth factor receptor (HER)-2 status, chemotherapy, hormone therapy, and lifestyle factors (cigarette smoking, waist circumference, and physical activity)

Results: After 12,773.7 person-years of follow-up, we observed 337 deaths, of which 179 were breast cancer deaths. The mean age of diagnosis was 54.4 years, and most breast cancers were stage II or below (86%) and ER-positive tumors (71%). A higher PRSAABCG was associated with more favorable overall survival (HR per SD increase: 0.89, 95% CI: 0.79, 1.00), and this association was more pronounced when examining PRSAABCG as tertiles (Tertile 3 vs tertile 1 HR: 0.76, 95% CI: 0.57, 1.00). No statistically significant association was observed for breast cancer-specific survival (HR per SD increase: 0.94, 95% CI: 0.79, 1.12).

Conclusion: A PRS developed for breast cancer risk prediction in African ancestry women was associated with more favorable survival in a cohort of Black breast cancer survivors. Further research is warranted to confirm these findings in larger cohorts.

187

Associations Between Demographic and Tumor Characteristics with Chemotherapy Dose Reductions in Women Treated for Stage I-IIIA Breast Cancer

Aiello Bowles EB, Bhimani J, O'Connell K, Zakaria Z, Doud R, Griggs JJ, Kroenke CH, Laurent CA, Liu R, Nakata KG, Roh JM, Wang P, Bandera EV, Kushi LH, Kantor ED

Purpose: Prior studies have shown that patient age, body mass index (BMI), and comorbidities are associated with chemotherapy dose reductions; however, less is known about other patient and tumor characteristics. We assessed the associations between patient demographic and tumor characteristics with first cycle dose proportion (FCDP) and average relative dose intensity (ARDI) across multiple chemotherapy regimens in the Optimal Breast Cancer Chemotherapy Dosing (OBCD) study.

Methods: We evaluated 10,386 women ages 18+ years treated with adjuvant chemotherapy for stage I-IIIA breast cancer at Kaiser Permanente Northern California (KPNC) and Washington (KPWA) between 2004-2019. We examined associations between demographic factors (race, neighborhood-level income) and tumor characteristics (stage, grade, tumor size, lymph nodes, hormone receptor status, HER2 status) with FCDP (defined as a first cycle dose proportion <90%, reflecting clinician intent at chemotherapy initiation) and ARDI (defined as average relative dose intensity <90% across the course of chemotherapy). We used multivariable-adjusted Poisson regression models with a log-link function to calculate prevalence ratios (PR) of FCDP <90% and ARDI <90% with 95% confidence intervals (CI) adjusting for age, BMI, and Charlson comorbidity index.

Results: Overall, 6% of women had a FCDP <90% and 19% had an ARDI <90%. In adjusted models, women in the highest income quartile were less likely to experience FCDP <90% (PR=0.55; 95%CI: 0.44, 0.69) and ARDI <90% (PR: 0.70; 95%CI: 0.62, 0.79) than women in the lowest income quartile. Women with HER2-positive disease were more likely to experience FCDP <90% (PR: 1.45; 95%CI: 1.23, 1.70) and ARDI <90% (PR: 1.76; 95%CI: 1.62, 1.92) than women with HER2-negative disease. No other tumor factors were statistically significantly associated with FCDP or ARDI.

Conclusions: Income and HER2 status were associated with chemotherapy dose reductions after adjusting for age, BMI, and comorbidity. Understanding dose reductions, the factors associated with them, and their impacts on treatment outcomes including toxicities, quality of life, recurrence, and survival will be important to improving the quality of care for women with breast cancer.

188-T

Biological Aging Following Autologous Hematopoietic Stem Cell Transplantation: The Potential Modifying Role of Beta Blockers

Awoyinka IA, Rentscher KE, Cole SW, Rizzo JD, Knight JM

Background: Cancer survivors demonstrate signs of accelerated aging following treatment that have been associated with worse outcomes, including functional decline and premature mortality. Psychosocial stress and stress-related activation of the β-adrenergic system can also impact aging processes. Although many survivors undergoing hematopoietic cell transplantation (HCT) experience distress during treatment, the potential contribution of stress to biological aging in this setting is poorly understood. We examined the impact of HCT on molecular processes in the cellular senescence pathway—a hallmark of biological aging—and whether treatment with a β-blocker (propranolol, which reduces adrenergic signaling) affects this process. We hypothesize that biological aging will increase following HCT and that propranolol will mitigate this effect.

Methods: We performed secondary data analysis of a phase 2 RCT for patients with multiple myeloma undergoing a first autologous HCT (n=25). Participants were randomized to either intervention (propranolol, n=12) or control (n=13). Propranolol was given from 1 week prior to 4 weeks following HCT. Blood was collected at baseline (day -7 from HCT), pre-transplant (day ,àí2), and post-transplant (day +28). Whole-genome transcriptional profiling of peripheral blood mononuclear cells was used to assess biological aging markers: DNA damage response (DDR; 29-gene composite), cellular senescence signals p16INK4a and p21 (CDKN2A and CDKN1A), pro-inflammatory senescence-associated secretory phenotype (SASP; 60-gene composite), and a measure of senescent cell burden (SenMayo; 125-gene composite).

Results: In controls, biological aging markers increased pre- to post-HCT, though none reached statistical significance. In the propranolol group, significant increases in DDR expression were observed (p<0.000), as was a marginally significant increase in p16INK4a (p=0.064). DDR expression was significantly higher in propranolol vs. controls post-HCT (p=0.044), suggesting a greater increase in DNA damage response in those receiving a β-blocker.

Conclusions: β-blockers may influence biological aging in HCT. However, further research with larger samples is needed to clarify the impact of β-blockade on cellular senescence processes in this setting.

189-T

Characterizing AI Applications in U.S. Oncology Trials: A Cross-Sectional Analysis

Verma H, Mistry S, Divaker J, Jayam KV, Yoon HS, Markham MJ, Braithwaite D, Karanth S

Purpose: Artificial intelligence (AI) has driven innovative transformation in most aspects of modern life, from entertainment to commerce, and recently in healthcare. We conducted a cross-sectional analysis of AI-related oncology trials based on ClinicalTrials.gov, intending to characterize the use of AI in oncology-related trials in the United States (US).

Methods: In this cross-sectional study, ClinicalTrials.gov was queried for oncology clinical trials conducted in the U.S., between 2007 to 2023. The search resulted in the identification of 53 completed trials using AI-related search terms from the National Library of Medicine. Demographic data (race, ethnicity, sex, and age) and trial characteristics (e.g., cancer type, study design, and AI methods used) were extracted. A descriptive analysis was conducted to evaluate these trials as per the Cancer Control Continuum (CCC).

Results: A total of 53 completed trials were included, comprising 39 interventional (73.6%) and 14 observational trials (26.4%). Of these, only 11 trials had published results, 19 (35.8%) focused on multiple or unspecified cancer sites, and specific cancer types included breast cancer (n=9, 17.0%), colorectal cancer (n=8, 15.1%), and skin cancer (n=6, 11.3%). Across the CCC, most trials were treatment (n=22), detection (n=13), and survivorship (n= 9). AI-related terms most frequently used included “Computer” (n=22), which focused on health education, patient decision support across the CCC, and mobile or web-based applications addressing cognitive training and cancer-related stress for patients. “Machine learning” (n=10) was applied in digital image analysis, patient identification using multimodal data (e.g., electronic health records, lab results, demographics, and comorbidities), and clinician nudges. “Artificial Intelligence” (n=9) was applied in image and video analysis for detecting cancer and tumor characterization and treatment planning.

Conclusion: AI-related oncology trials have increased since 2007, but significant gaps remain in reporting in ClinicalTrials.gov, particularly concerning the data sources for AI characteristics. These deficiencies hinder thorough evaluation of AI’s uses, highlighting the need for more rigorous and transparent reporting of clinical trial data.

190-T

Desire for Biologic Children and Infertility Concerns among Adolescents and Young Adults Newly Diagnosed with Breast Cancer

Stal J, Zheng Y, Dibble KE, Rosenberg SM, Johnson E, Mack JW, & Partridge AH

Purpose: To determine the relationship between desire for biologic children and infertility concerns among female adolescents and young adults (AYAs) newly diagnosed with breast cancer.

Methods: Female AYAs (18-39 years) newly diagnosed (within 3 months) with breast cancer (stage 0-III) were recruited for participation in a prospective study using an online supportive care intervention, Young, Empowered, and Strong (YES, NCT04379414). We used baseline self-report survey-based data to examine associations between sociodemographic factors and fertility-related concerns using two-sided Fisher’s exact tests.

Results: The median age of AYAs who completed the baseline survey (N=172) was 35 years at diagnosis (range 21-39) and study enrollment (range 21-40). Most were non-Hispanic white (73.3%), partnered (69.2%), privately insured (85.3%), and diagnosed with stage I (33.1%) or II disease (40.1%). In total, 39.8% reported a desire to have biologic children, with greater desire reported by younger AYAs (≤30 years at diagnosis [68.8%] v. ≥31 years, 34.5%, p=0.013) and AYAs without partners (56.7% v. 31.9% among partnered AYAs, p=0.026). Overall, AYAs were somewhat/very concerned about possible long-term side effects of cancer treatment (82.6%), having their own children (39.0%), and becoming infertile after treatment (34.3%). AYAs who reported a desire for biologic children reported significantly greater concern regarding infertility (75.6% v. 8.1%, p<0.01), long-term side effects of treatment (90.2% v. 72.6%, p=0.044), and having their own children (80.5% v. 17.7%, p<0.01) than AYAs who did not. Younger AYAs (≤30 years at diagnosis [55.6%] v. ≥31 years [30.3%], p=0.015) and AYAs without partners (51.9% v. 26.1% among partnered AYAs, p<0.01) reported significantly greater concern regarding infertility. AYAs without partners also reported significantly greater concern regarding having their own children (59.6% v. 29.4% among partnered AYAs, p<0.01).

Conclusion: Infertility concerns are prevalent among young women newly diagnosed with breast cancer, especially those diagnosed at younger ages and without partners, underscoring the importance of comprehensive and tailored oncofertility care delivery to mitigate concerns and support goal-concordant reproductive outcomes.

191-T

Ecological Momentary Assessment of Quality of Life in Women With Metastatic Breast Cancer

Mossman B, Small BJ, Velazquez-Sosa MA, Rodriguez JD, Bobbitt A, Mathurin A, Glenn L, Drakeford S, Guerra R, Isaacs C, Chitalia A, Gallagher C, Graham D, Kadan-Lottick N, O'Neill SC, Conley CC

Purpose: As little research outside of clinical trials has longitudinally examined quality of life (QOL) needs among women with metastatic breast cancer (MBC), we assessed within- and between-person variation in determinants of QOL for women with MBC using ecological momentary assessment (EMA).

Methods: Women treated for MBC completed 12 EMA surveys over 4 weeks measuring: global QOL, symptom severity (depression, anxiety, pain, fatigue, slowed cognitive functioning, appetite loss, nausea, GI distress, decreased libido), and positive affect (social connection, peace, joy). All were assessed using a visual analog scale (0-100). Multilevel mixed-effects models adjusted for demographic and clinical characteristics that were significantly related to QOL ($p<0.05$) and analyzed the relationship between QOL and symptom severity and positive affect ratings using within-person (better or worse than the individual's average) and between-person (better or worse than the sample average) variables as predictors.

Results: Participants (N=118; 47.5% non-Hispanic White, 35.6% non-Hispanic Black,10.2% Hispanic) at a mean age of 57.6 years (SD=12.2) and 4.3 years since diagnosis (SD=4.4) had a mean global QOL rating of 71.7 (SD=19.0). For symptom severity, decreased libido (60.8) and fatigue (35.0) were most severe, while appetite loss (20.3) and nausea (10.2) were least severe. Average positive affect ratings were generally high (all ≥70.0). Mixed models indicated that, in terms of between-subjects effects, individuals who reported more depression ($p=.009$) and nausea ($p=.005$), and less joy ($p<.001$) experienced worse QOL. Additionally, within-person effects indicated that QOL was lower when individuals reported more depression ($p<.001$), anxiety ($p=.012$), and fatigue ($p=.004$); lower appetite ($p=.019$) and libido ($p=.018$); and less social connectedness ($p=.001$), joy ($p=.040$), and peace ($p<.001$) compared to their personal average.

Conclusions: Among women with MBC, both individual and group differences in symptom severity and positive affect predicted their overall QOL. These findings can inform the development of targeted, "just-in-time" intervention strategies to improve QOL in line with individuals' varying experiences of symptoms and positive affect over time.

192

Effects of Tai Chi Qigong on Sleep Quality in Older Male Cancer Survivors: Analysis of a 3-Arm Randomized Controlled Trial

Arana-Chicas E, Irwin MR, Blair CK, An J, Lin Y, Lu S, Chen C,Arap W, Saraiya B, Kinney AY

Purpose: Cancer survivors who completed primary cancer treatment often face lingering side effects that impair sleep quality. Tai Chi Qigong (TCQ) has been found to be an effective intervention for improving sleep quality. This study evaluated the impact of TCQ, compared to an exercise intensity-matched (EIM) program and usual care (UC), on improving sleep quality among male cancer survivors with fatigue.

Methods: The study enrolled men aged 55+ who completed primary cancer treatment at least 3 months before enrollment (excluding hormone therapy). Participants were randomly assigned to TCQ, EIM, or UC. Follow-up assessments occurred at the 6-week midpoint and 1-week, 3 months, and 12 months post-intervention. The TCQ intervention included deep breathing techniques, synchronized movements, poses, and meditation, delivered over 12 weeks, twice weekly for 60-minute sessions. EIM matched TCQ's intensity, frequency, and duration with static, stretching, and eccentric movements. The UC group received standard care. Sleep quality was assessed with the Pittsburgh Sleep Quality Index (PSQI). Linear contrasts based on mixed effect models estimated mean differences within arms.

Results: Among the enrolled participants (n=113), mean age was 69 years (SD=7.0), most were non-Hispanic White (77%), and had prostate cancer (87%). More TCQ participants (62%) had clinical remission of sleep disturbance (PSQI score ≤5) at 12 months compared with EIM (47%) and UC participants (43%). There were statistically significant improvements in sleep quality in the TCQ arm from baseline to 6 weeks (mean PSQI change: -0.80, $p=0.04$) and trends toward improvements at 1 week (-0.71, $p=0.09$) and 3 months (-0.70, $p=0.11$). For EIM participants, there were statistically significant improvements from baseline to 6 weeks (-1.09, $p=0.01$), 3 months (-1.20, $p=0.01$), and trends toward improvements at 1 week (-0.85, $p=0.06$) post-intervention. There were no significant improvements in sleep quality in the UC group.

Conclusion: TCQ and EIM improved sleep quality in male cancer survivors with fatigue, with more TCQ participants having sustained improvements at 12 months. Based on these results, TCQ should be considered as a complementary intervention to improve sleep quality in male cancer survivors.

193

Exploring Oncologists' Experiences with Ovarian Function Suppression for Breast Cancer

Lee KT, Hu E, Henry NL, Hershman D, Hoogland AI, Gwede CK, Jim HSL, Soliman HH, Vadaparampil ST

Purpose: Current guidelines recommend the addition of ovarian function suppression (OFS) to endocrine therapy to reduce the risk of breast cancer recurrence among pre-menopausal women at high risk of recurrence of their hormone receptor positive breast cancer. Limited data are available regarding provider attitudes and decision-making patterns regarding OFS. We sought to investigate barriers and facilitators to OFS use from the perspective of treating oncologists.

Methods: We conducted a cross-sectional survey of medical oncologists who treat patients with breast cancer across the United States. Recruitment occurred between November 2023 and May 2024. This study was reviewed by Advarra's Institutional Review Board and deemed to be research exempt (MCC 22572). Participants were provided with an information sheet describing the project.

Results: Among our 56 respondents, 54% were female, 61% were non-Hispanic White, 71% had more than 10 years of oncology work experience and 64% practiced in an academic setting. We found that larger tumor size, higher nodal burden, higher recurrence scores, and receipt of chemotherapy, were associated with stronger recommendation for OFS. Only 9% of oncologists surveyed feel ‚Äòvery confident' with determining menopausal status in women who were pre-menopausal at diagnosis with amenorrhea post-chemotherapy. More than 3/4s of respondents indicated a need for greater specificity in clinical guidelines regarding 1) the assessment of menopausal status post-chemotherapy, 2) assessment of recovery of ovarian function post-chemotherapy, and 3) assessment of ovarian function in peri-menopausal women on treatment with endocrine therapy and OFS.

Conclusions: Our findings suggest that oncologists are likely to recommend OFS to pre-menopausal women at high risk of recurrence of hormone receptor positive breast cancer. We also identified lack of clarity in current clinical guidelines regarding assessment and management of women on OFS as a potential barrier to OFS use.

194-T

High Fusobacterium Nucleatum Abundance Is Associated with Cachexia Onset in Colorectal Cancer Patients: Results from the ColoCare Study

Ilozumba MN, Lin T, Hardikar S, Byrd DA, Round JL, Stephens WZ, Holowatyj AN, Warby CA, Damerell V, Li CI, Figueiredo JC, Toriola AT, Shibata D, Fillmore GC, Pickron B, Siegel EM, Kahlert C, Florou V, Gigic B, Ose J, Ulrich CM

Purpose: Cachexia accounts for about 20% of all cancer-related deaths and indicates poor prognosis and functional impairment. The gut microbiome is implicated in cancer cachexia by promoting systemic inflammation. However, the impact of Fusobacterium nucleatum (Fn), a microbial risk factor for colorectal cancer (CRC), on the development of cachexia in CRC patients has not been established.

Methods: Baseline/pre-surgery stool samples from n=87 patients with stages I-III CRC in the ColoCare Study, a prospective cohort of newly diagnosed CRC patients, were included in the study. Quantitative real-time polymerase chain reaction (PCR) was used to amplify/detect Fn DNA in pre-operative fecal samples. Using Fearon criteria, cachexia at 6 months post-surgery was defined as >5% weight loss over the past 6 months or body mass index (BMI) of <20kg/m2 and weight loss of >2%. Multivariable logistic regression was used to estimate the association between Fn abundance and onset of cachexia while adjusting for important covariates including age, stage at diagnosis, tumor site and recruitment center. Sensitivity analyses was conducted excluding patients with antibiotics use in the past year (n=17) and patients who received neo-adjuvant treatment (n=23), respectively.

Results: High fecal Fn abundance compared to negative/low fecal Fn abundance was associated with 4-fold increased risk of cachexia onset at 6 months post-surgery (OR= 4.82, 95% CI = 1.15, 20.10, p-value= 0.03). Sensitivity analyses excluding patients with antibiotic use in the past year or patients who received neo-adjuvant treatment did not change the study findings.

Conclusion: Pre-operative high fecal Fn abundance was associated with onset of cachexia at 6 months post-surgery in CRC patients. This is the first study to link Fn abundance with cachexia in CRC patients.

195-T

Interventions to Improve the Delivery of Guideline-Concordant Fertility Discussions to Adolescent and Young Adult Cancer Patients: The Oncologist Perspective

Stal J, Yi SY, Freyer DR, Mack JW, Partridge AH, Miller KA

Purpose: To detail, from the perspectives of oncologists, interventions to improve the delivery of guideline-concordant fertility discussions to adolescent and young adult (AYA) cancer patients.

Methods: We recruited oncologists who treat AYAs at risk of infertility from an NCI-designated Comprehensive Cancer Center to participate in a semi-structured qualitative interview. We reviewed transcripts for patterns following the Braun and Clarke (2006) method for establishing trustworthiness during thematic analysis.

Results: All oncologists (N=12; female [66.7%]; White or Asian race [41.7% each]) reported discussing fertility with their AYA patients. Reported interventions included: (1) electronic medical record (EMR) reminders to discuss fertility: “If the EMR had a reminder, ‚Äòyour patient may be an AYA, did you discuss fertility?’ I think people may adhere to guidelines more, and then prompted the guideline as a reminder;” (2) automatic referrals for fertility discussion: “Just as they’re scheduled to see an oncologist for the first time, if they’re under 40, they’re automatically offered a visit to discuss fertility;” (3) designated person to discuss fertility: “I’m not an OB-GYN. I’m not a reproductive endocrinologist (REI). I don’t know all the new things available to help,‚Ä¶So if there were a person who could see the patient, an REI or a patient navigator, who has the initial information so the patient could be informed as early as possible about how this might work into their treatment;” and (4) expedited fertility consults: “If there were a special order that said fertility in the context of urgent need for cancer therapy and that held some weight to expedite things.”

Conclusions: Several systems-level interventions were perceived by oncologists to improve guideline-concordant oncofertility care delivery, including administrative enhancements (e.g., EMR reminders, automatic referrals) and defined care pathways (e.g., designated person to discuss, expedited consults). As fertility remains a salient unmet need among AYAs, guideline-concordant counseling is likely infrequent. Therefore, care-setting interventions are needed to facilitate the delivery of guideline-concordant care and ensure that AYAs receive actionable oncofertility counseling.

196

Mothers At-Risk for and Surviving with Breast/Ovarian Cancer: The Role of Community-Based Organizations in Promoting Quality of Life

Zamir T, Statman MR, Sleiman Jr. MM, Fleischmann A, Silber E, Tercyak KP

Purpose: Many women at-risk for and surviving with breast/ovarian cancer are simultaneously raising children. These women often experience unique challenges due to concurrent demands as both parents and patients with cancer alike. Community-based cancer control organizations (CBOs) offer vital patient navigation (PN), including psychoeducational services. Yet, little is known about how PN addresses these mothers’ comprehensive care needs.

Methods: A secondary analysis was conducted on annual (2022, 2023) survey data from N=1,758 women participating in a CBO. The prevalence of motherhood (i.e., those with older and/or younger children), along with program utilization, PN quality, care satisfaction, empowerment (e.g., sense of control, self-efficacy), and health-related quality of life (QoL) were assessed. Between- and within-group differences were examined along with QoL co-factors.

Results: Out of the 69% of navigated women who were mothers, most were raising adult children only (age >18; 56%), yet 31% were mothers with young children only (age <18), and 13% were mothers with both adult and young children (χ2=341.46, p<0.001). While mothers with adult children reported poorer quality of life (QoL) than mothers with young children (physically unhealthy days, t=-2.2, df=526, p<0.05; total unhealthy days, t=-1.2, df=533, p< 0.05), there were no significant differences in their PN experiences. For mothers with young children, better QoL was associated with a lower genetic risk for cancer (r=-0.12) and a stronger sense of psychosocial empowerment (r=.10) (all p’s<.0.05). In an adjusted multivariate regression model of quality of life, as empowerment increased the influence of PN quality decreased (ß=-0.007, SE of ß=0.00, p=0.02)—suggesting that strengthening mothers of young children’s sense of agency over their breast/ovarian cancer is critical to achieving overall well-being.

Conclusions: Mothers are a well-represented population among those seeking cancer control services in their communities. CBO-led cancer control programming that supportively cares for these mothers across their cancer journey can be essential to QoL, especially for those who are raising minors.

197-T

Objectively Measured Ultraviolet Radiation Exposure among Skin Cancer Survivors and Associations with Demographic and Health History

Miller DM, Stratton, DB, Hall CA, Steed M, Skiba MB

Purpose: Skin cancer is the most common cancer in the United States and those diagnosed with a skin cancer have an increased risk of a secondary cancer diagnosis. Health behaviors influence subsequent cancer risk. Ultraviolet (UV) exposure is the leading skin cancer risk factor. We seek to describe the UV exposures of the skin cancer survivors in this cohort and identify associations between demographic characteristics and self-reported exposures.

Methods: Twenty-five individuals with prior skin cancers were enrolled in Harvest for Health Together Arizona (H4H2-AZ), a mentored community gardening intervention, from 2022-2024. A subset of participants (n=13) wore a UV dosimeter on their non-dominant wrist for 7-days prior to starting intervention. The dosimeter measured average dose of ultraviolet radiation (J/m2) and dose as a percentage of the average total daily UV irradiance for the month of data collection. T-tests were utilized to compare the mean of both outcome variables by demographics, cancer diagnosis, and self-reported UV exposure.

Results: Individuals were diagnosed with melanoma (n=8) or NMSC (n=5), majority female (61.5%), an average of 65.4 years of age, and 10.3 years post diagnosis. Individuals in this cohort were 15.4% Fitzpatrick skin type I (always burns, never tans), 30.8% type II (usually burns, tans minimally), and 53.8% type III (sometimes mild burn, tans uniformly). The mean daily dose of UV was 40 J/m2 representing 0.7% of the average daily dose of UV irradiance for the month of data collection. Characteristics with significant associations with average daily dose of UV included gender, cancer stage, and Fitzpatrick skin type. Characteristics associated with percentage of daily UV irradiance included gender and Fitzpatrick skin type.

Discussion: Participants in H2H2-AZ had a relatively low level of UVR exposure with everyone receiving less than one standard erythemal dose per day. Mean daily UV exposure was higher among males, cancer stage 0 or I, and type III-IV skin. Significantly higher percentages of daily UV irradiance were identified in men and type III-IV skin. While promoting UV protective behaviors remains of high importance for all skin cancer survivors, this study identifies potential areas for targeted interventions.

198-T

Older Cancer Survivor Perception of Utilizing Digital Technology to Support Healthy Survivorship: A Qualitative Study

Werts-Pelter SJ, Inzunza DI, Chen Z, Bea JW, Sokan AE, Thomson CA

Purpose: While digital technology is a promising way to address barriers to delivering behavior change intervention and supportive care to older cancer survivors, exploration of the usability and interest in employing digital tools to promote lifestyle change among this population is still needed. This study aimed to explore the knowledge and perception of utilizing digital technology as a tool for health promotion among older cancer survivors.

Methods: Semi-structured interviews were conducted remotely via teleconferencing technology with 22 cancer survivors over the age of 55 years. Participants were recruited from the community and an online survey panel site. The interview guide was grounded in the Diffusion of Innovation (DOI) Theory and the Technology Acceptance Model (TAM) to explore survivor perception of relative advantage, complexity, usefulness, compatibility, and ease of use of digital technology. Participants were also queried about features they desire in a digital tool to support lifestyle behavior change. Interview transcripts were analyzed using a directed content analysis approach in Dedoose software with thematic codes derived from the DOI theory and TAM.

Results: Participants were predominately non-Hispanic White and female (17/22, 77.3%), an average age of 66.8 (¬ffl 6.2) years, and 40.9% (9/22) had less than a college education. Key themes included: (1) high perceived technology aptitude among older cancer survivors, (2) common use of technology for health tracking, (3) the perception of technology as a convenient and efficient way to track health, (4) desire to learn and adapt to new technology to support health, and (5) avoidance of technology that is too challenging to learn individually. Survivors identified five key features they want to see incorporated in future digital technology-delivered lifestyle behavior change interventions: accountability, feedback, gamification, socialization, and tracking.

Conclusions: The interviews provide insight into how older cancer survivors perceive technology and use it for health promotion. Results support the acceptability and feasibility of implementing digital technology-based cancer survivorship programming with older adult survivors of cancer.

199-T

Patient Cannabis Use in Cancer Care: Oncologists' Insights

Kasiri N, Parada Jr. H, Martinez LS, Doran N, Patel S, Strong D, McDaniels-Davidson C

Purpose: Cannabis use is increasingly reported among cancer patients and survivors; however, little is known about oncologists' perceptions, knowledge, and practices related to cannabis use in this population. In this study, we described oncologists' perspectives on patient cannabis use and cancer care.

Methods: All practicing oncologists (n=158) at the University of California, San Diego Moores Cancer Center received an email request to complete a survey about patient cannabis use in the spring of 2024. Forty oncologists completed the survey, resulting in a 25% response rate. The 34-question survey assessed eligibility and authorization to prescribe cannabis or cannabinoids, their perceived benefits and risks of cannabis use, and levels of comfort, confidence, and concern regarding patient use of cannabis.

Results: The study population was predominantly male (53%), non-Hispanic White (58%), and specialized in medical oncology (50%). Most oncologists (60%) began their medical practice prior to California's 2016 legalization of cannabis, and 75% noticed a rise in patient cannabis use since then. Nearly three-fourths (66%) of oncologists believed there is no social stigma associated with physicians recommending or prescribing cannabis to their patients. However, views differed based on the timing of their practice: 47% of those who began practicing before 2016 felt there was no stigma regarding patient cannabis use ($\chi2=4.0$; $p=0.05$). Nearly 80% were somewhat or fairly confident when discussing cannabis use for managing cancer-related symptoms or treatment-related side effects. However, only 23% felt fairly confident in their ability to integrate cannabis into their patients' treatment plans. Ninety percent agreed on the need for formal training before recommending cannabis and expressed interest in learning more about its use.

Conclusion: Developing comprehensive training programs could improve physician confidence in integrating cannabis into cancer treatment plans, as would conducting research on the efficacy and safety of medical cannabis and establishing clear clinical guidelines.

200-T

Perceptions of Text Message Communication among Young Adult Cancer Survivors in a mHealth Physical Activity Intervention Trial: A Qualitative Analysis

Sauls R, Coffman EM, Asrar Z, Valle CG

Purpose: Young adult cancer survivors (YACS) are at risk of reduced physical activity (PA) levels despite few interventions existing. Assessing the unique experiences and perceptions of YACS, who have participated in a mHealth PA intervention, can be promising in guiding modifications and improvements in recruitment and adherence to future research studies. Thus, this project aims to better understand perceptions from YACS regarding text message communication as part of a mHealth PA intervention to improve communication among this population in future interventions.

Methods: Semi-structured interviews were conducted via Zoom or phone call among YACS (aged 18-39) who completed the intervention portion of a randomized controlled trial of a theory-based mHealth intervention to increase PA levels. Text messages were sent 5x a week in months 1-6 and 1x a week in months 7-12 as part of the intervention, with some specifics regarding individual PA goals (i.e., step count), website access, and weekly goals. Two reviewers analyzed qualitative data via thematic content analysis. Demographic data were collected via survey, and descriptive statistics were generated.

Results: Among the YACS (n=36) interviewed, age ranged from 22.8-39.7 (mean = 33.3), and were 64% female, 61% White, and 86.1% non-Hispanic. Time since diagnosis averaged 4.3 years (range = 0.3-9.2). Most of the population reported that text message communications helped improve PA levels (n=31; 86%). Positive themes reported include encouragement/motivation, positive reinforcement (e.g., messaging when almost at PA goal), and reminders. Of those that mentioned recommendations for improving text message communications (n=21; 58%), common themes were increasing engagement (e.g., using pictures), improving individualization (e.g., per step count), timing, and shortening the length of messages.

Conclusion: Text message communication to improve PA levels was found acceptable and helpful for YACS, which participated in a mHealth PA intervention. Recommendations to improve engagement, timing, personalization, and message length can enhance communication strategies with YACS in future interventions. Implementing these techniques can increase participant engagement, adherence, and interest in future studies.

201

Psychometric Evaluation of Patient-Reported Outcome Measures for Firefighters Undergoing Cancer Treatment

Beaver CC, Brown E, Resto L, Koru-Sengul T, Caban-Martinez AJ, Penedo FJ, Kobetz EN, Solle NS

Purpose: Firefighters are at an increased risk of cancer compared to the US general population due to hazardous occupational exposures. While many studies have investigated cancer risk, there is a need to understand how cancer treatment might impact firefighters' ability to manage work. This study explores cancer symptoms and confidence to manage disease in firefighters undergoing cancer treatment.

Methods: In a cross-sectional study, active firefighters undergoing cancer treatment completed a health survey including the MD Anderson Symptom Inventory (MDASI), to assess the participants' cancer symptoms and how it affected their daily lives and the Chronic Disease Self-Efficacy Scales (CDSES), to study how confident a person is in doing certain activities. The score scales for both measures were 0-10. A higher number for MDASI and CDSES indicates worse symptoms and higher self-efficacy. Mean item scores and 95% confidence intervals (CI) were calculated. A one-sample t-test was applied on the MDASI core symptom items to compare the sample data with published results from MDASI validation studies.

Results: A total of 17 male, firefighters with a mean age of 48.2¬ffl7.7 enrolled in the study. A majority being white (94.1%), non-Hispanic (70.6%), with 29.4% reporting hematologic malignancies and 35.3% comorbid condition. The MDASI subscales with higher symptom severity were fatigue (mean=4.41;95%CI:2.8-6), sleep disturbances (4.59;3-6.2), distress (4.06;2.4-5.7), and drowsiness (4.47;2.7-6.2) while lack of appetite (1.6;0.4-2.8) and vomiting (1.6;0-3.3) had lower symptom severity; however, the lower severity symptoms with significant p-value as compared with cancer survivors from MDASI validation studies were shortness of breath (0.06;-0.07-0.18, $p<0.0001$) and lack of appetite (1.59;0.42-2.75, $p<0.04$). The CDSES scores to manage symptoms and the disease in general were 5.77¬ffl0.19 and 6.97¬ffl0.14, respectively.

Conclusions: MDSAI scores show that firefighters manage their disease symptoms better than other cancer survivors and feel more confident in balancing disease management with work and treatment, possibly due to the healthy worker effect. Given a firefighter's job demands, more research is needed to address the needs of this occupational group.

202

Racial and Ethnic Disparities in Health-Related Quality of Life (HRQOL) among Cancer Survivors: Examining Multilevel Sociodemographic, Behavioral, and Social and Built Environment Factors

Chu JN, Canchola AJ, Keegan THM, Nickell A, Oakley-Girvan I, Hamilton AS, Yu RL, Gomez SL, Shariff-Marco S

Purpose: We aimed to assess sociodemographic, behavioral, and social and built environment factors that may explain disparities in reported HRQOL among racial and ethnic minoritized cancer survivors (survivors).

Methods: We harmonized data from three studies of survivors recruited from California cancer registries. HRQOL was calculated from the Short-Form health survey for physical (PCS) and mental (MCS) composite scores, with higher scores indicating better HRQOL. Using 3-level mixed linear regression models, we examined associations for sociodemographic characteristics, behavioral factors, and a suite of neighborhood attributes. To assess the relative contribution of each factor after accounting for clinical factors in a base model, sequential models added each factor to the model based on their order of influence (OI). The OI was calculated as the difference in the parameter estimate (PE) for each racial and ethnic minoritized group (compared to non-Hispanic White [NHW]) from the base model when adding each factor individually in separate models.

Results: The pooled data for 2,477 survivors included 72% who were over 60+ years of age and 54% females. Half identified as NHW (52%), 17% as Asian American/Pacific Islander, 16% as African American, and 13% as Hispanic. African American survivors had lower PCS compared to NHW survivors (PE -2.6, 95% confidence interval (CI) -3.9, -1.3) in the base model. In sequential models, adjusting for neighborhood socioeconomic status (SES) attenuated this disparity (PE -0.4, 95% CI -1.7, 1.0). Hispanic survivors had lower MCS compared to NHW survivors (PE -2.1, 95% CI -3.2, -0.9) in the base model. In sequential models, adjusting for annual household income attenuated this disparity (PE -0.9, 95% CI -2.1, 0.3).

Conclusions: Our study demonstrates that SES impacts disparities in HRQOL, though differentially for PCS (neighborhood-level SES) and MCS (individual-level SES). Identifying factors that explain disparities in HRQOL and for which populations they are relevant will help inform targeted interventions to improve survivor outcomes. Future work to improve HRQOL need to support individuals with lower income and residence in low-resourced neighborhoods to ensure survivors have equitable opportunities and resources.

203

Recruitment Successes and Challenges for a National Cancer Institute Community Oncology Research Program Trial of an Internet-Delivered Sexual Health Intervention for Breast Cancer Survivors (WF-2202)

Shaffer KM, Dressler EV, Glazer JV, Kittel C, Wood E, Lawson H, Reese JB, Danhauer SC, Showalter SL, Cohn W, Clayton AH, Reddy A, Weaver KE, Lesser GJ, Ritterband LM

Purpose: To report successes and challenges in recruiting a large, diverse sample of breast cancer survivors to a clinical trial of an Internet-based sexual health intervention.

Methods: Partnered, post-treatment breast cancer survivors with sexual concerns (target N=320) are being recruited through the Wake Forest (WF) NCI Community Oncology Research Program (NCORP) Research Base. The target was to enroll 9-10 survivors/month, with >33% from minoritized racial and/or ethnic backgrounds. Potentially eligible survivors are invited to complete an online eligibility screener. All assessments and intervention procedures are completed online.

Results: The Sexual Health and Intimacy Enhancement (SHINE) trial (identifier: WF-2202, NCT06216574) began recruitment on 02/29/24. As of 07/30/24, 456 potentially eligible survivors were identified, with 334 completing the eligibility screener (73% of identified), 236 deemed eligible (71% of screened), and 201 enrolled (85% of eligible) for an average recruitment rate of about 40 survivors/month (about 4x faster than expected). However, at that time, the sample was 85.6% non-Hispanic white (n=172), with only 6.0% of a minoritized racial background (n=12) and 6.5% of Hispanic/Latina ethnicity (n=13; unknown race/ethnicity n=4). A review by members of the study team and the WF NCORP Health Equity Committee identified several potential reasons for demographic disparities, including early study adoption at midwestern sites with limited diversity and longer startup times at sites serving more diverse patients; no differences in screener completion, eligibility, or enrollment by race/ethnicity were apparent. Enrollment was restricted on 08/22/24 to only survivors of minoritized racial and/or ethnic backgrounds, with 22 enrolled since that time as of 10/16/24.

Conclusions: Recruitment to this national clinical trial of a sexual health Internet intervention for breast cancer survivors has dramatically exceeded expectations, suggesting strong interest in research about cancer-related sexual concerns and Internet-based assessment and interventions for these concerns. Measures have been enacted to improve the sample diversity, and future NCORP trials may consider how to support faster study startup at minority/underserved sites.

205-T

Symptom Burden and Its Association with Quality of Life among Pediatric Cancer Survivors after Treatment Completion

Napit K, Coulter D, Cordts K, Dai D, Farazi E, Watanabe-Galloway S.

Purpose: Pediatric cancer is the leading cause of death by disease among children. With advanced treatments, survivors are living longer. However, they often experience multiple symptoms even after the treatment completion. Multiple symptoms prevalence deteriorates the quality of life. Limited studies in pediatric cancer have assessed the association between multiple symptoms or symptom burden and quality of life, but none were assessed after the treatment completion.

Methods: We conducted a cross-sectional study of 136 pediatric cancer survivors aged 10-25 who completed treatment within eight years from 2 major hospitals in Nebraska. We used a survey to collect data during their hospital visit, the validated Memorial Symptom Assessment Scale tool to collect information on 30 symptoms, and the PedsQoL instrument to measure the quality of life. We conducted a multiple linear regression model to find the association between multiple symptoms and quality of life at a significance level with a p-value of less than 0.05 and an adjusted beta coefficient.

Results: The mean age of participants was 14.91, the mean year since diagnosis and treatment completion was 4.66 and 3.05, respectively, and the mean number of symptoms was 6.06. Difficulty concentrating 48.53%), lack of energy (45.59%), and feeling drowsy (45.59%) were the most common symptoms. Around 80% of participants experienced more than one symptom. The mean total quality of life score was 80.84 out of 100. The model was adjusted for possible confounders and sociodemographic and clinical characteristics. High symptom burden (β= -1.707, 95% CI -20.087, -1.327) was associated with a overall lower quality of life. Symptom burden (β=-1.533, 95% CI -2.045, -1.395) and bone tumor (β=-12.914, 95% CI -2.045, -1.020) were associated with physical quality of life. Symptom burden was also found to be associated with psychosocial quality of life (β=-1.800, 95% CI -2.206, -1.395).

Conclusion: Even after the treatment completion, multiple symptoms occur in pediatric cancer survivors, and the prevalence of a higher number of symptoms influences the quality of life. Regular symptom assessment of pediatric cancer survivors is required.

206

Synchronous Online Lifestyle Intervention Improves Cancer Patient Outcomes and Projects to Reduce Costs of Care

Cogle C, Iyengar N, Hanson E, Battaglini C L, Yangyang D, Anand A, Mukker T, Bajaj K, Manning K

Purpose: To evaluate efficacy of a synchronous digital lifestyle intervention—delivered via personalized live coaching sessions targeting exercise, nutrition, and meditation—on cancer-related health outcomes and cost reduction, compared to standard care. The intervention is designed to address unique needs of adult cancer patients and delivered through an online app.

Methods: An IRB-approved, decentralized RCT is being conducted across cancer types in 30+ US states. Any adult patient who has undergone cancer treatment in the last 12-months can participate. The intervention group is given access to synchronous, live, 1:1 personalized coaching sessions (45 mins each), based on medical profiles. The control receives asynchronous standard care information and videos on exercise, nutrition and meditation. Interim results at 90 days were analyzed using a difference-in-differences (DiD) approach. Healthcare expenditure was tracked using claims data, while adherence rates informed cost projections. Quality of Life (QoL) was measured using the FACT-G scale, and presenteeism was evaluated through self-reported work motivation and performance.

Results: Interim analysis of 146 participants (40% non-white, median age 54) showed significant improvements in QoL FACT-G scores (DiD = -12.47; p = 0.0003). Subscale improvements were observed in functional (p = 0.00478), emotional (p = 0.0046), social (p = 0.0087) and physical well-being (p = 0.0057). Additionally, significant gains were seen in work motivation (p = 0.0473) and performance (p = 0.0136). Engagement with synchronous intervention was high, with 85% patients completing sessions after 90 days. A validated cost model projects 26% reduction in cancer-related healthcare costs and is supported by interim findings showing 40% reduction in expenditures (p = 0.034).

Conclusion: Synchronous delivery of personalized lifestyle coaching online significantly improves QoL and presenteeism for cancer patients. High adherence to intervention, along with clinical and economic benefits, underscores the high potential of this approach as a complementary treatment in standard oncologic care. Widespread implementation could result in substantial healthcare cost savings, estimated at ~$50 billion when scaled across all cancer types.

207-T

The Impact of Tobacco and Alcohol Use on Anxiety and Depression Among Lung Cancer Survivor-Caregiver Dyads

Abufarsakh B, Shelton BJ, Stapleton J, McLouth LE, Okoli CTC, Studts JL

Purpose: The purpose of this study was to determine the concordance and predictive association between alcohol and tobacco use and anxiety and depressive symptoms among LC survivor-caregiver (LC-SG) dyads using the actor-partner interdependence model (APIM).

Method: LC survivors and their primary caregivers self-reported their current tobacco and alcohol use and completed the anxiety and depressive symptoms questionnaire using the Patient-Reported Outcomes Measurement Information System (PROMIS,Ñ¢). Data were analyzed using the SAS program. Descriptive statistics were used to describe the sample characteristics. Cohen's Kappa and Spearmen correlation were used to assess concordance. The APIM was applied using complete case analyses to determine the association between tobacco and alcohol use and anxiety and depressive symptoms among LC-SG dyads.

Results: A total of 48 LC-SG dyads were included in the analysis. Around 22% and 6% of the LC-SG dyads were current tobacco and alcohol users, respectively. The analysis revealed significant concordance in tobacco (k=.53,p=.003) but not alcohol (k=.25) use, anxiety (r=.15) or depression (r=.19,p=.12). In the actor model, suggestive trends included LC survivors' tobacco use that was associated with their anxiety (β=8.35,p=.05) and depressive symptoms (β=7.81,p=.08). However, alcohol use was not associated with anxiety or depressive symptoms among LC survivors or their caregivers. In the partner model, we found suggestive trends of survivors' tobacco and alcohol use on caregiver anxiety (β=-5.8, β=5.8) and depression (β=-8.1, β=2.4). We found no effect of caregivers' tobacco use on survivor anxiety or depression scores.

Conclusion: The results of this study indicate a notable concordance in tobacco, alcohol use, and depression, suggesting that the behaviors and mental health of one partner can influence the other. Study limitations include a small sample size in addition to missing data that may have produced insufficient power to detect significant effects. Future research should involve larger samples to better assess these relationships and provide more robust conclusions in understanding the interplay between tobacco and alcohol use and mental health symptomatology in LC survivor-caregiver dyads.

208-T

The Nutrition Security of Breast Cancer Survivors and their Caregivers

Namey ER, You W, Foreman BR, Mulligan C, Sethi Y,
Goda A, Pilehvari A, Porter KJ

Purpose: Nutrition security (NS) reflects one's consistent access to foods that promote well-being and prevent disease, expanding upon the concept of food security. NS is crucial for positive cancer survivorship outcomes. Yet, little is known about NS among cancer survivors and their caregivers.

Methods: This secondary analysis utilized survey and interview data from a longitudinal study examining the financial toxicity experience of breast cancer survivors (i.e., from diagnosis onward) treated at a single academic cancer center and their caregivers. Validated measures assessed NS and the related concepts of control over food healthfulness (HC) and dietary choices (DC). Scores of 0-2 on the 5-point scale were categorized as indicating "challenges." Interviews explored personal NS experience. Transcripts were content coded and quantitized. Quantitative data were summarized descriptively.

Results: The sample (24 survivors and 16 caregivers) was predominantly female (76%) and non-Hispanic White (91%), with an average age of 57.9 (SD=12.2). All participants reported some degree of cancer-related financial stress at enrollment. Challenges were reported in NS (23% survivors, 0% caregivers), HC (27% survivors, 43% caregivers), and DC (14% survivors, 7% caregivers). Overall, 36% of survivors and 43% of caregivers reported challenges in at least one area. Patterns suggested that NS-related challenges may vary according to socio-demographic and treatment-related factors, such as age, cancer stage, treatment phase, and presence of a dedicated caregiver. Interview data revealed food choices were influenced by both financial and non-financial (e.g., time, fatigue, stress) factors for 40% and 28% of participants, respectively. Additionally, 73% of participants tried to maintain or adopt a healthy diet, while 30% used cost-saving strategies, such as eating out less, bulk purchasing, and buying more processed foods.

Conclusion: A notable portion of breast cancer survivors and caregivers face challenges related to NS. These findings highlight the need for further research to better understand how NS experiences differ by sociodemographic and treatment-related factors and underscore the importance of targeted interventions to support NS among cancer survivors and caregivers.

209

The Utilization of Hormone Replacement Therapy and Associated Outcomes in Endometrial Cancer Survivors: a Propensity-Score Matched Cohort Study

Yu X, Kuo YF, Adekanmbi V, Guo F, Richardson G,
Hoang TN, Sharma P, Berenson AB

Purpose: To examine HRT utilization patterns and outcomes associated with HRT use in endometrial cancer survivors experiencing premature menopause following cancer treatment.

Methods: We conducted a retrospective cohort study using data from the TriNetX database's U.S. Collaborative Network, which includes electronic health records and insurance claims data from 66 healthcare organizations across the United States. Patients diagnosed with endometrial cancer between January 1, 2005, and December 31, 2019, were included. We used 1:1 propensity score matching to create cohorts with and without HRT prescriptions. We described HRT utilization patterns and estimated hazard ratios (HRs) with 95% confidence intervals (CIs), comparing patients with and without HRT. The primary outcome was endometrial cancer recurrence. Secondary outcomes included incident osteopenia/osteoporosis and fractures, cardiovascular disease, deep vein thrombosis, and all-cause mortality.

Results: We identified 10,873 women aged 18-51 years with endometrial cancer, and 1,284 (11.8%) had an HRT prescription in the year following their endometrial cancer diagnosis. After propensity score matching, the HRT and non-HRT groups included 1,273 individuals each. The absolute standardized mean differences were all <0.1, suggesting a good balance of covariate distribution. The following HRTs were the top commonly prescribed initial therapies: estradiol (37%), medroxyprogesterone (30%), conjugated estrogens (22%), norethindrone (11%). The risk of endometrial cancer recurrence was not elevated among survivors with HRT compared to those without HRT (HR 0.95, 95% CI, 0.63-1.42). Additionally, there were no significant differences in the risk of any secondary outcomes between the HRT and non-HRT groups.

Conclusions: Most of the endometrial cancer survivors in the cohort did not receive HRT in the year after their diagnosis. Endometrial cancer survivors receiving HRT were not found to have elevated risk of endometrial cancer recurrence compared to those without HRT. As endometrial cancer is increasing among younger women, it is important to improve access to HRT for patients who would benefit from it.

210

Trends in Breast Cancer Incidence-Based Mortality by Estrogen Receptor Status in the U.S. from 2000-2019

Vo JB, Corley ME, Mitra PR, Shiels MS, Veiga LHS, Davis Lynn BC, Gierach GL, Berrington de Gonzalez A

Purpose: Breast cancer mortality rates (MRs) are declining in the U.S., but it is unclear whether trends vary by tumor characteristics. To evaluate the relative contribution of estrogen receptor (ER) status, we calculated breast cancer incidence-based mortality, a method that parses MRs by tumor characteristics recorded at time of diagnosis.

Methods: Using the 17 Surveillance, Epidemiology, and End Results cancer registries linked to death certificates, we calculated temporal trends in age-adjusted breast cancer incidence-based MRs per 100,000 person-years among 72,313 women who died of invasive breast cancer in ≤7 years from initial diagnosis, at ages 30-84 years, from 2006-2019 (diagnosed between 2000-2019 with known ER status) by ER status (positive/negative). We assessed the average annual percent change (AAPC) and corresponding 95% confidence intervals (CI). Results were further stratified by stage (localized/regional/distant) and age at death (30-54/55-64/65-74/75-84 years).

Results: Overall, breast cancer incidence-based mortality declined from 2006 to 2019 (MR-2006=23.1, MR-2019=19.3; AAPC=-1.33%, 95%CI=-1.60, -1.06%). However, incidence-based mortality rates increased for women diagnosed with ER+ breast cancer (MR-2006=11.4, MR-2019=12.2; AAPC=0.68%, 95%CI=0.25%, 1.11%) but decreased for ER- breast cancer (MR-2006=7.9, MR-2019=6.1; AAPC=-2.54%, 95%CI=-2.97%, -2.11%). Among ER+ breast cancer patients, increasing incidence-based mortality rates were statistically significant for women diagnosed with distant stage (AAPC=3.15%, 95%CI=2.77%, 3.53%) and women aged 30-54 years at death (AAPC=1.40%, 95%CI=0.27%, 2.54%). Among ER- breast cancer patients, decreasing mortality rates were consistent across localized and regional stage and all age groups. The greater declines over time were observed among ER- breast cancer patients with regional stage (AAPC=-3.69%, 95%CI=-4.19%, -3.19%) and aged 30-54 years at death (AAPC=-2.92%, 95%CI=-3.55%, -2.29%).

Conclusions: Rising mortality rates observed among women diagnosed with ER+ breast cancer, especially for women aged 30-54 years, are alarming given the availability of effective therapies to reduce mortality.

211-T

Trends of Comorbidities and Survival among Patients with Renal Cell Carcinoma in Asia

Minji Jung, Eunjung Choo, Zhengyi Deng, Jinhui Li, Marvin E. Langston, Benjamin I. Chung, Sukhyang Lee

Purpose: Comorbidity could influence cancer diagnosis, treatment, prognosis, or survival. Although comorbidity burden in patents with renal cell carcinoma (RCC) is high, limited evidence exists on longitudinal trends of individual comorbidity prevalence and its impact on overall survival (OS) among RCC patients, particularly in Asian populations.

Methods: We included adults diagnosed with a first malignant RCC between 2010 and 2021 using the Korean Nationwide Health Insurance database, covering over 97% of the entire Korean population. Comorbidities, diagnosed within one year prior to RCC diagnosis, included nineteen medical conditions. We calculated prevalence of single and multiple comorbidities at the time of RCC diagnosis. Odds ratios for having comorbidities were estimated, adjusting for age, sex, and other comorbidities. Kaplan-Meier curves were used to assess 12-year overall survival up to 5 years of follow-up. All analyses were further stratified by age (20-39, 40-59, 60-79, 80+ years) and sex.

Results: Among 42,740 RCC patients, 68.7% were men, with a median age of 59 years (Q1-Q3: 49-68). The prevalence of three or more comorbidities rose from 29.4% in 2010 to 38.6% in 2021. Common comorbidities included hypertension (51.3%), dyslipidemia (40.2%), mild liver disease (27.4%), and diabetes (25.1%). Men and women exhibited different odds for conditions such as mild liver disease, hypertension, cerebrovascular disease, dyslipidemia, and peptic ulcer disease. Hypertension and dyslipidemia frequently coexisted with other comorbidities (49.5%-95.0%). Among RCC patients with congestive heart failure and cerebrovascular disease, 99.4% and 96.7% had more than one comorbidity, respectively. Having more comorbidities was associated with lower OS, with no sex differences. Decreased OS was most pronounced in patients aged 40-59 and 60-79 with five or more comorbidities.

Conclusion: Proportion of RCC patients with multiple conditions is high and has risen in recent years. While survival rates are relatively high, comorbidities may reduce these rates. Our findings underscore the importance of comprehensive management for both cancer and comorbid conditions in RCC patients. Further studies in different races/ethnicities are needed.

212

Use of Non-steroidal Anti-inflammatory Drugs, Acetaminophen and Mortality among Older Breast Cancer Survivors

Anike O, Sherman ME, Landry M, Shahi S, Wang Y, Peoples AR, McCullough LE, Patel AV, Teras LR, Bodelon C

Purpose: Prior studies assessing associations of non-steroidal anti-inflammatory drug (NSAIDs) use and survival among breast cancer (BC) patients have been limited by short follow-up, primary assessment of aspirin and failure to evaluate cardiovascular disease (CVD)-specific mortality.

Methods: This analysis included 7,452 women from the Cancer Prevention Study II Nutrition Cohort diagnosed with non-distant BC between 1992-2017 and followed from their diagnosis date until death through 2020 or loss of follow-up. NSAID and acetaminophen use were assessed in the survey prior to BC diagnosis. Hazard ratios (HR) and 95% confidence intervals (CI) for the risk of all-cause, BC- and CVD-specific mortality were estimated using Cox proportional hazards regression. Models were adjusted for age, race, factors assessed prior to the time of diagnosis (e.g., smoking status, body mass index, hypertension, cardiovascular disease, alcohol use, arthritis), clinical and treatment characteristics.

Results: The median age at diagnosis was 72 years (interquartile range (IQR): 66, 77). Most women were diagnosed with in situ or localized BC (80%). The median time from analgesic assessment to diagnosis was 1.2 years (IQR: 0.6, 1.9). Approximately 59% of women reported use of NSAIDs, 42% of aspirin and 28% of acetaminophen. During a median follow-up of 13 years (IQR: 7, 19), there were 3,997 (54%) total deaths, of which 803 (20%) were due to BC and 716 (18%) to CVD. Overall, NSAID use was not associated with all-cause mortality (HR=0.96, 95% CI: 0.88, 1.04), BC mortality (HR=0.91, 95% CI: 0.76, 1.09), or CVD mortality (HR=1.00, 95% CI: 0.83, 1.22). Findings were similar for aspirin and non-aspirin NSAID use. In contrast, acetaminophen use was associated with increased overall mortality (HR=1.10, 95% CI: 1.02, 1.18) and elevated CVD mortality (HR=1.15, 95% CI: 0.97, 1.37).

Conclusions: NSAID use, including aspirin, was not associated with improved all-cause, BC-specific or CVD-specific mortality in older BC survivors. However, use of acetaminophen —an analgesic without anti-inflammatory properties- showed an increased risk of all-cause mortality. Analysis on frequency, type and duration are on-going. These findings may inform recommendations for analgesic use for BC survivors.

213

Using Function and Form Matrices to Document Adaptations in the Exercise and Nutrition Interventions to Improve Cancer Treatment-related Outcomes (ENICTO) Consortium

Basen-Engquist K, Loomba P, Le D, Salz T, Puklin L, Perna F, Rolle L, Clavon R, Nauta P, Green T, McCleary C, Norton W, Rabin B

Purpose: The National Cancer Institute-funded Exercise and Nutrition to Improve Cancer Treatment Outcomes (ENICTO) Consortium is comprised of a Coordinating Center and four individual research projects with the goal of advancing our understanding of how exercise and nutrition interventions affect cancer outcomes and quality of life for cancer patients during active treatment. The goal of the ENICTO implementation science workgroup is to identify key components of the interventions tested and adaptations that occur in the implementation process.

Methods: To characterize and systematically document adaptations to the four interventions, we developed project specific and harmonized function and form matrices based on Jolles et al. 2019 and adapted a systematic adaptation documentation approach from Rabin et al. 2018 using the RE-AIM expanded FRAME. The development of the function and form matrices and the adaptation documentation methodology was iterative and guided by a cross-consortium implementation science workgroup.

Results: Project-specific function and form matrices were developed using project protocols and information from research teams. A total of eight common functions and 32 sub-functions were identified across the four projects. Example functions included 1) Outreach to share program information and engage participants, 2) Provide coaching to patients to support engagement in exercise and/or nutrition actions, and 3) Ensure the safety and well-being of patients. Forms within sub-functions were identified for each project. The adaptation documentation database was developed to reflect the needs of the ENICTO projects. The functions and sub-functions from our matrices were integrated as key elements of the database. Projects used multiple methods to identify adaptations including review of protocol changes, periodic reflection with research teams, member-checking, and review of meeting minutes to document adaptations both retrospectively and prospectively.

Conclusions: The final cross-project function and form matrices provide a useful framework for guiding decision-making related to intervention adaptations, which can be applied within the trials and in future effectiveness/implementation studies and in clinical implementation.

214-T

Ambient PM2.5 Air Pollution Exposure and Colorectal Cancer Incidence in Wildfire-Impacted Areas in the United States

Falkenberg NF, Wu AH, Aschebrook-Kilfoy BA, Mendoza JA, Knowlton T, Quennehen B, Haiman CA, Peters U, VoPham T

Purpose: The role of particulate matter <2.5 microns in diameter (PM2.5) on colorectal cancer (CRC) risk, especially from wildfires, has not been well explored. The goal of this study was to examine the association between PM2.5 exposure and CRC risk by wildfire-impacted areas.

Methods: CRC cases diagnosed from 2000-2021 were ascertained from Surveillance, Epidemiology, and End Results (SEER) cancer registries in the United States. PM2.5 levels (using satellite-based measures in a convolutional neural network from Atmospheric Composition Analysis Group) and wildfire data (population proportion living in wildfire-burned areas from Monitoring Trends in Burn Severity) were linked with the SEER year and county of residence at diagnosis using a geographic information system. Poisson regression with robust variance estimation was used to calculate incidence rate ratios (IRRs) and 95% confidence intervals (CIs) for the association between PM2.5 (per interquartile range [IQR] increase; 3.61 ¬µg/m3) and CRC risk adjusting for individual-level age, sex, race and ethnicity, marital status, year, and SEER registry, and county-level data on health conditions, lifestyle factors, and socioeconomic status.

Results: There were 770,348 CRC cases included in this study. There were no associations between PM2.5 or wildfires and CRC risk. We observed evidence of an interaction between PM2.5 and wildfire-impacted areas on CRC risk (adjusted IRR per IQR increase in counties heavily impacted by wildfires [>9% of population; median value]: 1.15, 95% CI 0.99-1.33; vs. counties not impacted by wildfires: 1.03, 95% CI 0.99-1.06; p interaction <0.001). There was a statistically significant three-way interaction with race and ethnicity (p interaction <0.001), in which the association between PM2.5 and CRC risk by wildfire-impacted areas was stronger among non-Hispanic White persons (n=517,461 cases; adjusted IRR in counties heavily impacted by wildfires: 1.23, 95% CI 1.04-1.45; vs. counties not impacted by wildfires: 1.03, 95% CI 0.99-1.07).

Conclusions: The association between PM2.5 exposure and CRC risk differed according to wildfire-impacted areas and race and ethnicity. Future research should utilize high-resolution address locations and individual-level data on confounders.

215-T

Ecologic Evaluation for the Relationship Between Residence in Counties With Superfund Sites and Incidence of Early-Onset Colorectal Cancer

Eriom J, Young S, Huang E, Lee MJ, Kitzman H, Hsu PC, Bauer M, Ho SM, Syed K, Su LJ

Purpose: Superfund sites, contaminated by hazardous substances like lead and arsenic, are a growing public health concern in Texas. These sites disproportionately affect underserved communities, where environmental exposure, poverty, and limited healthcare access increase vulnerability to disease. Prior research suggests that exposure to environmental toxins may elevate the risk of early-onset colorectal cancer (EOCRC). This study investigates the association between the presence of Superfund sites and EOCRC incidence across Texas, with a focus on socioeconomic disparities and environmental justice.

Methods: We conducted an ecological study using data from the Texas Commission on Environmental Quality, demographic data from the US Census Bureau, and cancer incidence data from the Texas Cancer Registry (2018-2022). Environmental exposure was measured by the presence and number of Superfund sites. Demographic factors included rurality, median household income, age, and percentage of Black residents. Logistic regression was used to estimate the odds of EOCRC incidence by environmental and demographic factors. ANOVA compared age-adjusted incidence rates and case counts between counties with and without Superfund sites. Multivariable models adjusted for rurality, income, age, and racial composition to identify disparities in EOCRC risk.

Results: Counties with Superfund sites had significantly higher odds of EOCRC compared to those without (OR: 9.44, 95% CI: 4.91-18.15). Each additional Superfund site further increased EOCRC odds (OR: 3.12, 95% CI: 1.49-6.57). ANOVA confirmed significant differences in age-adjusted incidence rates between counties with and without Superfund sites ($p < 0.0001$). Adjusted models showed that EOCRC odds remained elevated in Superfund counties (OR: 9.28, 95% CI: 3.30-26.10). Low-income Black residents in urban areas faced the highest risk. The age-adjusted EOCRC incidence rate was 4.63 per 100,000 in counties with Superfund sites, compared to 2.13 in counties without.

Conclusion: Proximity to Superfund sites is associated with a higher risk of EOCRC, emphasizing significant public health concerns. These findings reveal the disproportionate burden of environmental hazards on marginalized populations, who also face socioeconomic burdens.

216-T

Environmental Exposures and DNA Methyltransferase Polymorphisms: A Study of Breast Cancer Among Women in Arkansas

Mayberry SA, Rogers LJ, Hsu PC, Stahr SD, Su LJ

Approximately 50% of breast cancer cases occur without identifiable risk factors, underscoring the need for novel research. Epigenetic modifications, such as DNA methylation, are critical for regulating gene expression and maintaining genomic stability. Aberration in these patterns have been identified in cancer development. Environmental exposures, including air pollutants and polycyclic aromatic hydrocarbons (PAHs), have been linked to DNA methylation alterations. This study examines the relationship between environmental exposures and breast cancer, with a focus on gene-environment interactions involving DNA methyltransferase (DNMT) genetic polymorphisms.Using a nested case-control design, we analyzed data from 3,638 participants in the Arkansas Rural Community Health Study (2007-2013). Environmental exposures were estimated using the Environmental Quality Index (EQI) developed by the EPA, aggregating data from 2000-2005. Key exposures included air pollutant index scores, trichloroethylene, PM,ÇÇ.,ÇÖ, and benzo[a]pyrene, each categorized by distribution. Saliva samples were genotyped using TaqMan Assay to obtain single nucleotide polymorphism (SNP) data for DNMT genes. After applying exclusion criteria, 2,296 women (63.1%) were included in the final analysis.We conducted multivariable logistic regression and genome-wide association studies (GWAS) to assess associations between environmental exposures, genetic polymorphisms, and breast cancer, adjusting for key confounders. Women with high air pollutant index scores had 54% higher odds of breast cancer (OR: 1.54, 95% CI: 1.23-1.92). Among specific exposures, only trichloroethylene was significantly associated with increased odds of breast cancer (OR: 1.28, 95% CI: 1.07-1.52). Furthermore, the DNMT3A haplotype TACGA was linked to breast cancer risk (OR: 1.38, 95% CI: 1.09-1.74), with notable interactions between this haplotype and environmental exposures.These findings highlight the importance of exploring gene-environment interactions to better understand how environmental stressors and genetic variants influence epigenetic regulation and breast cancer risk. Future research can build on these insights to guide public health interventions and risk reduction strategies for vulnerable populations.

217-T

Environmental Injustice and Cancer Survival in the United States

Karasaki S, Casey JA, Phipps AI, VoPham T

Purpose: The Environmental Justice Index (EJI), developed by the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry, is a nationwide dataset of census tract-level scores of cumulative environmental, social, and health burdens. Cancer patients may be particularly vulnerable to the harmful effects of environmental burdens (e.g., air pollution) because of cancer treatment-induced physiological changes. The purpose of this study was to examine the associations between EJI scores and risk of mortality after cancer diagnosis.

Methods: We examined data for individuals diagnosed with cancer between 2000-2021 using Surveillance, Epidemiology, and End Results Program (SEER) cancer registries across the United States. The Environmental Burden Module (EBM) (e.g., diesel particulate matter) and Social Vulnerability Module (SVM) (e.g., poverty) of the EJI were spatially aggregated to the county and linked with the SEER county of residence at diagnosis. We used Cox proportional hazards regression to calculate hazard ratios (HRs) and 95% confidence intervals (CIs) for associations of EBM and SVM scores with all-cause and cause-specific mortality, adjusted for individual-level age, sex, race and ethnicity, marital status, year of diagnosis, SEER registry, and county-level measures for health conditions, lifestyle factors, and urbanicity.

Results: This analysis was comprised of 6,921,403 individuals diagnosed with cancer. In adjusted models, we observed a statistically significant positive association between higher EBM scores and risk for all-cause mortality after cancer diagnosis (n=3,389,898 deaths; HR highest vs. lowest quintile: 1.05, 95% CI 1.02-1.08, p<0.01). We observed similar positive associations for deaths due to cardiopulmonary disease (n=515,943; HR: 1.21, 95% CI 1.06-1.37, p<0.01), cancer (n=2,325,760; HR: 1.06, 95% CI 1.02-1.11, p<0.01), and other causes (n=548,195; HR: 1.18, 95% CI 1.05-1.33, p<0.01). There were no associations between SVM scores and mortality.

Conclusions: Residence in areas characterized by high environmental burden (based on the EJI) was associated with increased risk for mortality after cancer diagnosis. Future research should determine specific components of the EBM driving these associations.

218-T

Exploring the Co-occurrence of Radon Exposure and Smoking in Relation to Lung Cancer Rates: A Rural-Urban Analysis in North Carolina

Iradukunda J, Akinyemiju T, Yang Z

Lung cancer remains the leading cause of cancer-related deaths in the United States and is the third most common cancer among men and women, following breast and prostate cancers, accounting for 11.7% of all new cancer cases. In 2024, an estimated 234,580 new cases and 125,070 deaths due to lung cancer are expected according to the Surveillance, Epidemiology, and End Results (SEER) program. North Carolina mirrors this trend, with lung cancer being the most common cancer in the state, and its incidence surpassing the national average. Despite a national decline in lung cancer incidence and mortality over the last two decades—largely attributed to smoking cessation efforts—smoking remains the primary risk factor. However, environmental carcinogens, particularly radon, also play a significant role. While the individual impacts of smoking and radon on lung cancer are well-established, the combined influence of these factors, especially across different geographic regions, remains underexplored. This study seeks to investigate the co-occurrence of radon exposure and smoking in relation to lung cancer rates, focusing on rural versus urban disparities in North Carolina. Specifically, the study aims to assess whether average household radon levels differ across various geographical areas (metropolitan, micropolitan, small town, and rural areas) in 2020, and to examine how 2020 county-level radon exposure and smoking rates—along with their interaction—are associated with 2022 lung cancer rates, controlling for rural-urban status.This study utilizes county-level data on smoking rates, lung cancer incidence, household radon levels, and Rural-Urban Continuum Codes for North Carolina. Descriptive analyses first assesses differences in average radon levels across geographic regions in 2020. Hierarchical linear regression models examine the association between 2020 radon levels, county smoking rates, and their interaction with 2022 lung cancer rates, adjusting for rural-urban status. These analyses will provide insights into how environmental and behavioral risk factors jointly contribute to regional disparities in lung cancer outcomes.

219-T

From Smoking to Superfund Sites: An Ecologic Evaluation of Environmental Contributors to Lung Cancer Mortality in an Urban Landscape

DuBois TD, Henry KH, Lynch SM

Purpose: Lung and bronchus cancer (LBC) rates have declined with decreases in tobacco smoking. However, LBC remains a primary cause of cancer deaths, and rates among non-smokers are increasing. Although radon and air pollution are known risk factors for LBC, screening guidelines and prevention efforts focus on smoking. This ecological study assesses whether environmental factors from existing data are associated with neighborhood-level LBC mortality rates in an urban setting. It identifies where smoking and environmental factors could be reduced to prevent LBC deaths.

Methods: Age-adjusted LBC mortality rates for Philadelphia's 46 neighborhoods were calculated. Potential LBC risk factors from existing neighborhood-level data sources, including social determinants and toxic exposures, were examined for correlation with LBC mortality. Linear regression models with R-squares are reported to identify risk factors associated with LBC mortality rates. The risk factors that were high were identified for each neighborhood with higher lung cancer mortality compared to the city overall.

Results: Cigarette smoking alone explained 28% of the neighborhood-level variation in LBC mortality rates. A final multivariate model (R-square value 0.44) included traffic density, distance to superfund sites, and smoking. Of the seven neighborhoods that have higher LBC mortality rates than the city overall, all were in the highest quartile for traffic density, three had high smoking rates, and two were close to superfund sites.

Conclusions: Findings suggest smoking cessation programs alone might not address the LBC burden in Philadelphia. Additional studies using individual-level case data focused on traffic density and specific pollutants historically generated by Philadelphia-area superfund sites appear warranted. Radon and fine particulate matter, known risk factors for LBC, were not significant predictors of neighborhood-level LBC mortality rates, possibly due to data limitations. The R-square for explaining LBC mortality was low, suggesting exposure measures from additional data sources should be explored in future studies. However, findings suggest that interventions to mitigate the impact of traffic-related air pollution may be warranted in some Philadelphia neighborhoods.

220

Residential Radon Testing among Families of Newborn Children: Evaluation of 20 Years of Program Data

Pillay P, Ray MN, Bascom R, Moss JL

Purpose: To assess uptake of residential radon testing through the Pennsylvania Department of Environmental Protection's Newborn Radon Testing Project (NRTP; 2002-2023).

Methods: NRTP distributes free radon testing vouchers to new parents after in-hospital delivery. Parents may use the voucher to request a radon testing kit via mail, which they can return to the state laboratory for radon testing. We evaluated parent- and program-level outcomes of NRTP using the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework. Data came from NRTP records as well as Pennsylvania Department of Health Birth Statistics.

Results: Among 3,093,704 babies delivered in Pennsylvania hospitals between 2002 and 2023, 24,165 (0.8%) parents requested radon testing kits through NRTP, and 11,556 of these parents (47.7%) completed radon testing (Reach). Across completed kits, 41.8% had radon above the EPA action level of 4 picocuries per liter (pCi/L), including 18.2% with very elevated radon (>10.0 pCi/L) (Effectiveness). Among 107 eligible Pennsylvania hospitals, 87 (81%) partnered with NRTP to distribute the vouchers to new parents (Adoption). Average program costs were $14,507/year, or $29/analyzed kit (Implementation).

Conclusions: Pennsylvania has high levels of radon, which is an environmental exposure that causes lung cancer and other chronic diseases. NRTP is motivated by new parents' interest in reducing residential hazards. It has high effectiveness and low cost for increasing residential radon testing among new parents, which makes it efficient and maintainable. However, additional research and intervention is needed to increase the program's reach and to evaluate radon mitigation efforts among families with elevated radon levels. Other states can adopt similar programs to disseminate radon testing to high-risk populations.

221

Spatial Analysis of Gynecologic Cancer Incidence and Toxic Release Inventory Sites in Texas

Khan A, Ramphul R, Wu Z, Jooyeon L, Yates M

Purpose: To evaluate spatial patterns of gynecologic cancer incidence in relation to Toxic Release Inventory (TRI) sites and social vulnerability indices in Texas to identify high-risk populations.

Methods: A descriptive retrospective chart review and spatial epidemiological pilot was conducted across Texas counties, using data from the Texas Cancer Registry (2010-2020) and TRI site locations (2000-2010) to account for the latency period between exposure and cancer development. Patients diagnosed with gynecologic cancers (n=8,728) were geocoded based on their county of residence at the time of diagnosis. These geocoded points were mapped within a Geographic Information System (GIS) to identify geographic patterns, specifically to detect localized cancer clusters and investigate neighborhood-level associations with social vulnerability as defined by the CDC's Social Vulnerability Index (SVI). Correlations were examined across four SVI themes: socioeconomic status, household composition & disability, minority status & language, and housing & transportation.

Results: GIS analysis identified clustered and dispersed cancer patterns. High-risk clusters were located in central and southern Texas, where elevated SVI scores (socioeconomic vulnerability, minority status, and transportation) coincided with high TRI density. Western Texas, despite similar TRI densities, showed lower cancer rates. Urban areas with high TRI densities aligned with socioeconomic and minority vulnerability, while rural areas with high SVI scores did not consistently show increased cancer rates.

Conclusions: The study highlights a clear association between gynecologic cancer clusters, high SVI scores, and TRI density, emphasizing central and southern Texas as high-risk areas. The findings suggest that while environmental exposures contribute significantly to cancer incidence, other factors such as healthcare access or regional differences in exposure pathways may mitigate or amplify these risks. Further refined spatial analyses and investigations into environmental exposure pathways are recommended.

222

Supporting Informed Decisions about Breast Cancer Screening in Communities with Known Environmental Contamination: A Pre-Post Study

Gunn CM, St. Angelo M, Romano M

We tested the impact of a breast cancer screening decision aid (DA), MyMammogram, adapted to include environmental risk information, on knowledge, risk perceptions, decisional conflict, and screening intentions. We conducted a pre-post survey study in communities with known per- and poly-fluoroalkyl substances (PFAS) contamination. We recruited women ages 39-49, with no personal history of breast cancer, and no mammogram in the past 12 months via community partners, local advertising, online listservs, and a survey panel in New Hampshire and Vermont. Enrolled participants completed a baseline survey and were then given access to MyMammogram. After viewing the DA, participants completed a post survey. Baseline surveys measured demographics, self-reported PFAS exposure and PFAS-related risk perceptions. Paired pre-post survey measures included breast cancer risk perceptions, screening knowledge, decisional conflict, and screening intentions. The mean age of the 67 participants was 43 years. Participants were majority non-Hispanic white (98%) and 26% were micropolitan, small town, or rural dwelling. In terms of potential PFAS exposure, 39% reported using private or well water; 19% had tested their water for PFAS contamination, and 48% used a home water filter. While most (63%) did not experience PFAS-related stress, 28% felt stress about the well-being of their family, and 22% constantly/often worried about the health effects of PFAS in the prior month. Before DA use, 27% felt it somewhat/very/extremely likely that they would develop breast cancer in the next 10 years, which reduced to 18% post-DA (p=0.002). Mean knowledge scores about breast cancer screening increased significantly, from 9 out of 10 pre-DA to 9.5 out of 10 post-DA (p<0.001). Pre-DA, 67% were sure about the best screening schedule for them, which increased to 90% post-DA (p<0.001). Participants who reported being somewhat/very/extremely likely to get a mammogram in the next year did not significantly decrease (88% pre- to 85% post-DA, p=0.05). Use of a DA incorporating information about environmental risk information reduced perceptions of individual breast cancer risk and improved knowledge and decisional conflict about breast cancer screening among women living in PFAS-contaminated communities.

223

Identifying, Understanding, and Reducing Ambiguity Aversion in Clinical Trials of Multicancer Detection (MCD) Tests

Payne JB, Rohde JA, Moser RP, Han PKJ

Purpose: Strong causal evidence is needed to evaluate the benefits and harms of multicancer detection (MCD) testing for cancer screening, but a conventional randomized controlled trial (RCT) requires a large sample size and long follow-up period. A novel "intended-effect" design—in which the control group receives MCD testing but the results are not disclosed or acted upon—would increase efficiency and reduce sample size requirements. However, people may dislike this for several reasons, including ambiguity aversion-a bias against options with unknown risks. We aimed to quantify the bias against the intended-effect design and experimentally attempt to restore interest by making the risks of being in the control group less unknown.

Method: 1,575 U.S. adults viewed a recruitment flyer for a hypothetical RCT of MCD tests. They were shown the same description of the treatment group but were randomly assigned to view one of four control group descriptions: 1) conventional (no MCD testing); 2)MCD testing with unknown results; 3)MCD testing with unknowable results (due to strict safeguards against result disclosure); and 4)MCD testing with unknowable, time-delayed results (due to testing of banked samples at the end of the trial). We ran ANOVAs/chi-square tests to examine differences in level of interest in study participation and intentions to participate, and explored potential mediators.

Results: Study interest was highest in the conventional control vs. all other conditions (all p<.05), but there was no difference in intentions to participate. There were no differences in either outcome between the unknown, unknowable, and time-delayed conditions. Trust partially mediated the effects of the unknown (indirect effect: b=-.03, p<.05; total effect: b=-.09, p<.01) and unknowable condition (indirect effect: b=-.07, p<.001; total effect: b=-.18, p<.001) on study interest.

Conclusion: A novel intended-effect RCT design induces less interest in participation than a conventional RCT design. This bias may be attributable to ambiguity aversion; however, efforts to mitigate this bias by reassuring participants about the unknowability of the test results were not effective, which may suggest that people's bias may be driven by other factors that deserve further investigation.