

and late (OR = 1.15, 95% CI, 1.05–1.25) thelarche, as was use of soy formula in infancy (Early: OR = 1.10, 95% CI, 0.93–1.30; Late: OR = 1.07, 95% CI, 0.92–1.25). Patterns were generally similar across strata of modifiers of interest. Conclusion: Associations between pre- and postnatal exposures and age at thelarche suggest that the early-life environment may influence breast development and therefore may also affect breast cancer risk by altering the timing of pubertal breast development.

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Ethnic Disparities in Methotrexate Neurotoxicity among Children and Adolescents with Acute Lymphoblastic Leukemia

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

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

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Feasibility of a Group-based Telehealth Psychosocial Intervention for Women with Non-Small Cell Lung Cancer (NSCLC)

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

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

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

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

Purpose: Financial hardship due to cancer is more common among African American than White survivors. The COVID-19 pandemic and its economic fallout have also disproportionately affected African Americans. The purpose of this study is to describe the financial and employment impacts of COVID-19 in a population of African

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

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Hair Product Use and Ovarian Cancer Risk

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Purpose: We evaluated whether hair products, including many known to contain carcinogens and endocrine disrupting chemicals, are related to incident ovarian cancer in a large prospective cohort. **Methods:** After excluding women with a history of ovarian cancer or bilateral oophorectomy, 40,559 Sister Study participants were included. Participants were aged 35–74 and had a sister with breast cancer but no history of breast cancer themselves at enrollment in 2003–2009. Participants completed questionnaires on frequency of hair product use (including hair dyes, straighteners/relaxers and hair permanents/body waves) in the 12 months prior to enrollment. Cox regression models were used to estimate adjusted hazard ratios (HRs) and 95% Confidence Intervals (CIs) for the association between hair product type and frequency of use in relation to incident ovarian cancer. We also assessed models stratified by tumor type (serous, non-serous). **Results:** After a mean of 10 years of follow-up, 241 women had self-reported an incident ovarian cancer diagnosis. Ever use of hair products in the past year (including permanent, semi-permanent and temporary hair dyes, straighteners/relaxers, and hair permanents/body waves) was not associated with a higher risk of ovarian cancer. However, frequent use (>4 times) of straighteners/relaxers in the past

year was positively associated with ovarian cancer (HR = 2.45, 95% CI: 1.27–4.73). This association was stronger for non-serous (HR = 4.25, 95% CI: 1.07–16.9) compared to serous (HR = 1.38, 95% CI: 0.47–4.04) ovarian cancers. Ever use of permanent hair dye was positively associated with non-serous (HR = 1.91, 95% CI, 1.10–3.33), but inversely associated with serous (HR = 0.65, 95% CI: 0.43–0.98) ovarian cancer (p -for-heterogeneity = 0.002). **Conclusion:** These results suggest that frequent use of hair straighteners/relaxers and possibly permanent hair dye may be positively associated with the occurrence of non-serous ovarian cancers.

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Historical Housing Discrimination, Indicators of Disinvestment, and Breast Cancer Outcomes Nearly a Century Later

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

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

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