Conclusions: While overall death rates decreased and survival increased, disparities exist by sex, age, race/ethnicity, and cancer type. Future improvements in pediatric cancer outcomes might depend on improving therapies, access to care, and supportive and long-term care.

Adherence to Children's Oncology Group Long-Term Follow-up Guidelines among high-risk adolescent and young adult cancer survivors

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Purpose: Cancer survivors are at risk of late effects from therapeutic exposures, making it essential to screen for early detection of these conditions. We evaluated adherence to the Children's Oncology Group Long-Term Follow-up Guidelines among adolescent and young adult (AYA) cancer survivors to understand gaps in survivorship care for this unique age group.
Methods: Kaiser Permanente Southern California members diagnosed with cancer between age 15-39 from 2000-2010 with 5-year survival after diagnosis were included (n=3827). Based on cumulative chemotherapy and radiation exposures, 1019 and 140 survivors were identified as high-risk groups recommended for early cardiomyopathy and breast cancer screening, respectively. For each individual, we calculated the Prevention Index (PI, proportion of person-time covered by preventive services relative to time eligible) for each screening service. We then dichotomized the PI and evaluated predictors for adherence to screening recommendations using multivariable logistic regressions.
Results: The mean PI for cardiomyopathy screening was 3.9% (SD=16.49%). For breast cancer screening, the mean PI was 77.5% (SD=25.13%) and 23.5% (SD=30.93%) among survivors of breast cancer and other cancers, respectively. Advanced stage (OR=3.17, 95% CI: 1.57-6.41) and breast cancer diagnosis (OR=3.46, 95% CI: 1.48-8.08) was associated with better adherence to cardiomyopathy screening. Age, race/ethnicity and stage at diagnosis were not associated with adherence to breast cancer screening guidelines.
Conclusion: We found a large gap in follow-up care for AYA cancer survivors at high risk for cardiomyopathy and breast cancer late effects. Adherence to recommended screenings was poor and may be influenced by cancer type and stage. Our findings can help guide improvement efforts for survivorship care.

T-Cell Acute Lymphoblastic Leukemia immunophenotype predicts the survival disadvantage of black children with ALL

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Purpose: Acute Lymphoblastic Leukemia (ALL) is the most commonly diagnosed childhood malignancy, despite improved survival. We aimed to assess ALL survival by race and sex, and to determine the exposure function of T-cell immunophenotype in the survival disadvantage of blacks and males.
Method: The Surveillance, Epidemiology and End Result (SEER) data of children with ALL, 1973-2015 were examined retrospectively. Survival was assessed using Kaplan Meier, Nelson Aalen cumulative hazard, Log rank, Shoenfeld for proportional hazard assumption, and Cox proportional hazard model for the predictors of survival.
Results: There were 18,720 cases of which 11,669 (62.5%) were B-ALL, 1,614 (8.6%) were T-ALL and 5,437(29%) were unspecified. Compared to whites, blacks with ALL were 42.1% more likely to die, hazard ratio (HR) = 1.42, 95% CI= 1.27-1.59. Relative to females, males were 30% more likely to die, HR=1.30, 95% CI= 1.21-1.39. Survival varied by immunophenotype, with T-ALL and ALL-unspecified indicating survival disadvantage relative to B-ALL. Children with T-ALL were 54% (HR=1.54, 95% CI=1.37-1.74), while children with ALL unspecified were 81% (HR= 1.81, 95% CI=1.68-1.94) more likely to die relative to B-ALL. After controlling for confoundings, blacks compared to whites with T-ALL were 61% more likely to die, adjusted HR (aHR)= 1.61, 99% CI= 1.10-2.39, while for B-ALL, blacks were 31% more likely to die, aHR=1.31, 99% CI= 1.03-1.66. In contrast, after similar adjustment, males with B-ALL were 21% more likely to die (aHR=1.21, 99% CI= 1.05-1.38).
Conclusion: T-Cell immunophenotype predicts the survival disadvantage of blacks, while B-lineage correlates with males' survival disadvantage.
Conflicts of Interest: All authors (LH, KH, KD and PM) reviewed the abstract and the supplement (methods and results), approved the final draft and have declared no conflicts of interest.

Stage of diagnosis and mortality among non-alcoholic fatty liver disease liver cancer patients: revision

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Purpose: Non-alcoholic fatty liver diseases (NAFLD) are suspected of causing between 15- 50% of hepatocellular carcinomas (HCC). NAFLD is suspected to be one of the main drivers of the increasing HCC rates. The epidemiology of NAFLD-HCC is severely limited because population-based cancer registries do not define precipitating factors (i.e., NAFLD and exclusion criteria like hepatitis). The objective of this research is to overcome cancer registry limitations and to describe NAFLD-HCC patients epidemiologically.
Methods: Medicare claims data were linked to the SEER national cancer registry data. Claims data linkages allow identification of NAFLD and exclusion of hepatitis and other HCC etiologies. We identified 1,132 patients with a NAFLD-HCC diagnosed between 1995-2013 aged 68 or older.
Results: Relative to symptomatic (severe) cirrhosis, patients without cirrhosis had increased the odds of late-stage NAFLD-HCC, [Adjusted Odds Ratio (AOR): 2.00, 95% Confidence Interval (95%CI): 1.4 - 2.8] and for patients with cirrhosis but who did not have documented symptoms [AOR: 1.26, 95%CI: 0.9-1.7]. Being unmarried increased the odds of late-stage cancer, [AOR 1.35, 95%CI: 1.0,1.7]. The hazard of death was highest among cirrhotic patients without symptoms, [Hazard Ratio (HR) 2.03, 95%CI: 1.1,3.9].
Conclusions: The newly identified group of NAFLD-HCC patients without cirrhosis are at a higher risk of late-stage diagnosis, and cirrhotic patients without symptoms are at the highest risk of death. Real world data like cancer registry and claims data are important to inform populations needing biomarker research, especially for NAFLD-HCC, for which a non-invasive diagnostic test does not exist.

Derivation of anthropometric-based equations to predict lean body mass composition of cancer patients

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Purpose: Lean body mass (LBM) of cancer patients is a predictor of chemotherapy-related adverse events. However, there are currently no measures of LBM that can easily be implemented in routine oncologic settings. Therefore, we aimed to derive, test, and validate anthropometric equations to estimate LBM of cancer patients.
Methods: Eight cycles of the National Health and Nutrition Examination Survey (NHANES) 1999-2014 were analyzed. A population of participants with self-reported physician diagnosed-cancer and recorded DXA measures was randomly split into training (75%) and testing (25%) sets. The training data was utilized to predict DXA measured LBM using height, weight, and four circumference measures (arm, waist, thigh, and calf). The developed models were utilized to estimate the LBM of the test sample. Differences between DXA measured and predicted LBM were assessed. Last, correlations of predicted LBM with albumin, creatinine, c-reactive protein and mortality were calculated with the validation set. Models were stratified by sex and/or race.
Results: Models were derived and tested from a sample of 1591 adult participants with self-reported cancer diagnosis and recorded DXA measurements. The model accurately predicted the LBM composition (R^2 = 0.87). Models predicted LBM better among males (R^2 = 0.92) than females (R^2 = 0.88). Predicted LBM (C-statistic: 0.59) discriminated death to similar magnitudes as body mass index (C-statistic: 0.56) and body surface area (C-statistic: 0.55).

Conclusions: Anthropometric measures can be used to accurately estimate LBM of cancer patients. Future research should apply these derived equations to measure LBM thresholds associated with chemotherapy adverse event risk.

Breast biopsy patterns and findings among older women undergoing screening mammography: what is the impact of age and comorbidity?

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Purpose: The goal of this project is to assess rates of biopsy and biopsy findings among older women undergoing screening mammography by age and comorbidity.
Method: We included 171,636 women ages 66-99 years with at least one screening mammogram from the Medicare-linked Breast Cancer Surveillance Consortium (BCSC) during 1999-2010. We calculated percentage of screens followed by biopsy within 90 days by age and comorbidity. Further, we assessed trends in biopsy rates using the Cochran–Armitage trend test.
Results: Among 527,254 screening mammograms, 6587(1.2%) were followed by biopsy within 90 days. Whereas the proportion of screens followed by any biopsy did not vary significantly by age (ages 66-74: 1.3%, ages 75-84:1.2%, ages 85-99:1.2%; p_{trend}=0.07), the proportions increased with increasing Charlson Comorbidity score (CCS) for women ages 66-74 and 75-84 (ages 66-74:CCS0:1.2%,CCS1:1.3%,CCS≥2: 1.6%; p_{trend}=<0.001 and ages 75-84:CCS0:1.2%,CCS1:1.3%,CCS≥2:1.3%; p_{trend}=0.01) but not ages 85-99 (CCS0:1.1%,CCS1:1.2%,CCS≥2:1.4%; p_{trend}=0.16). The proportion of screens followed by benign biopsy increased with increasing CCS for women ages 66-74 and 75-84 (ages 66-74:CCS0:0.77%,CCS1:0.88%, CCS≥2:0.94%; p_{trend}<0.001 and ages 75-84:CCS0:0.62%,CCS1:0.75%,CCS≥2:0.78%; p_{trend}=0.001) but not ages 85-99 (CCS0:0.48%, CCS1:0.57%, CCS≥2:0.61%, p_{trend}=0.23). The proportion of biopsies with a result of invasive cancer did not vary significantly by CCS in any age group ([ages 66-74: CCS0:28.4%, CCS1:25.5%, CCS≥2:30.8%; p_{trend}=0.93]; [ages 75-84:CCS0:37.2%,CCS1:36.0%,CCS≥2:32.0%; p_{trend}=0.15]; [ages 85-99:CCS0:46.8%,CCS1:43.5%,CCS≥2:43.8%; p_{trend}=0.60]).
Conclusions: Proportion of screens followed by biopsy and the proportion of screens with a benign finding increased with comorbidity burden among women ages 65-74 and 75-84 years, highlighting potential harm from high rates of benign findings among older women undergoing screening mammography.

Socioeconomic differences in depression among breast cancer survivors

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Purpose: Socioeconomic status (SES) affects access to quality health care and morbidity in breast cancer survivors, but little data exists if survivors from lower SES groups experience greater psychologic distress. Our analysis examined how SES affects depression occurrence in a cohort of survivors.
Methods: We studied 8,717 insured female (≥ 18 years) breast cancer survivors from Kaiser Permanente Southern California diagnosed from 2010-2012 (stages 0-IV) and followed through December 2017. Data elements were identified from comprehensive electronic health records. Depression diagnoses post-breast cancer were identified using ICD9/10 codes. Geocoded median household income quartiles were used to determine SES based on the 2010 census. We calculated the association between SES and depression using odds ratios and 95% confidence intervals.
Results: Depression post-breast cancer by SES varied within each race/ethnic group. Compared to Black women in the top 25% SES group, Black women in the lowest 25% SES group were 67% more likely to have depression (OR 1.67, 95% CI: 1.05-2.65) as were those in the middle SES group (>25-50% OR: 1.72, 95% CI: 1.04-2.83). In non-Hispanic White women, those in the lowest SES group were 32% more likely to have a depression diagnosis than those in the top 25% SES group (Lowest 25% OR: 1.32, 95% CI: 1.11-1.58).
Conclusion: Even in this insured population, survivors in the lowest SES group were generally more likely to have depression than those in the highest SES group. Our next steps include conducting multivariable analyses to disentangle the effects of SES, race/ethnicity and clinical factors.

Race/ethnic disparities in depression occurrence in a diverse cohort of breast cancer survivors

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Purpose: For many of the 3 million U.S. female breast cancer survivors, approximately 5-20% experience major depression following diagnosis, but sparse data exist about psychosocial distress in minority patients. The goal of this study was to explore whether race/ethnicity is associated with depression occurrence in breast cancer survivors.
Methods: We conducted a nested cross-sectional analysis within a cohort study of 8,717 breast cancer survivors. Subjects were identified from the Kaiser Permanente Southern California health plan. Inclusion criteria: Women 18 years and over, diagnosed from 2010-2012 (stages 0–IV), followed through December 2017 for depression occurrence post breast cancer diagnosis. Demographic, clinical and tumor characteristics were identified from the cancer registry and electronic medical records. Depression was identified using ICD9/10 codes and examined percentages and odds ratios by race/ethnicity.
Results: Overall, depression occurrence was 33.3% in survivors, but varied substantially by race/ethnicity, with the lowest occurrence in Asian/Pacific Islander (PI) (1.95%). White women had the highest odds of depression (OR 3.49 [95% CI, 2.93-4.15]), followed by Hispanic (OR 3.02 [95% CI, 2.50-3.65]) and Black (OR 2.05 [95% CI, 1.66-2.53]) compared to Asian/PI women.
Conclusions: An implication is that depression occurrence is similarly high in Hispanic and Black as in White women compared with Asian/PI women. Reasons for lower depression occurrence in the Asian/PI group is unclear; possibly more culturally sensitive assessments are needed. Promoting awareness may help the group to appropriately identify and manage depression. Next steps include conducting multivariable analyses to determine associations with depression in the different race/ethnic groups.

Cardiovascular and Chronic Disease

Diabetes prevalence among U.S. adults with disabilities: National Health and Nutrition Examination Survey, 2013-2016

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Purpose: Research indicates a higher prevalence of self-reported diabetes among U.S. adults with disabilities compared to those without. We estimated the prevalence of self-reported diagnosed and total (diagnosed and undiagnosed) diabetes by disability status to inform care.
Methods: We analyzed the 2013-2016 National Health and Nutrition Examination Survey data for noninstitutionalized U.S. adults aged 18 years and older. This study included 5,471 adults without and with self-reported disabilities (cognition, hearing, mobility, vision, independent living, or self-care). Diagnosed diabetes was self-reported diagnosed diabetes, and total diabetes was defined as diagnosed and undiagnosed diabetes by the American Diabetes Association criteria of fasting glucose/A1c/2-h plasma glucose. We compared the prevalence of diagnosed and total diabetes by disability status, types, and demographics.
Results: Prevalence of diagnosed diabetes was 20.9% (95% CI: 18.7, 23.2) and 6.9% (95% CI: 6.1, 7.9), respectively, in adults with and without disabilities. Prevalence of total diabetes increased to 30.7% and 12.4% among adults with and without disabilities, respectively. More than 9% of adults with disabilities had undiagnosed diabetes. The estimated prevalence of total diabetes was highest among adults with at least two types of disabilities (53.7%; 95% CI: 49.3, 58.0) followed by those with only mobility disability (17.5%; 95% CI: 14.3, 21.1).
Conclusions: We found that 9.8% and 5.5% of adults with and without disabilities, respectively, had undiagnosed diabetes. These results highlight the importance of