

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, Schoenfeld 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).