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Evaluating the Association of Age with Acuity and Severity of Illness at Initial Clinical Presentation in Patients with Leukemia and Lymphoma

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OBJECTIVES/GOALS: Adolescent and young adult (AYA) patients, diagnosed with cancer between 15 and 39 years of age, often have worse outcomes compared to younger children and older adults. We will characterize age differences in acuity and severity of illness at initial presentation, as a measure for health outcomes, in patients with new diagnoses of leukemia or lymphoma. METHODS/STUDY POPULATION: We will perform a single institution-based, retrospective analysis of a cohort of pediatric oncology patients at Children's Healthcare of Atlanta (CHOA) who were diagnosed with leukemia or lymphoma from 2010 to 2018. Data will be abstracted from the CHOA medical record and cancer registry. We will construct a severity score, with one point for 1) admission to the Intensive Care Unit (ICU), 2) ICU-level requirements at admission, 3) stage IV or metastatic disease, and 4) white blood cell count over 100,000/microliter. We will associate this score with age at presentation using logistic regression models among patients overall and stratified by disease type. All regression models will adjust for confounders (e.g., health insurance, race and ethnicity, and local-area social vulnerability level). RESULTS/ANTICIPATED RESULTS: Previous literature has shown increased cancer incidence and mortality in AYAs compared to younger children. Therefore, we hypothesize that AYA patients with a new diagnosis of leukemia or lymphoma will have a higher acuity and severity of illness at presentation than younger patients. We conducted a pilot study analyzing acuity and severity of illness by age, race, ethnicity, and insurance status. Bivariate comparisons suggested patients aged 10 and older were as likely as those younger to have a severity score of more than 0 at diagnosis (OR=0.661 , 95% CI 0.43-1.01). However, this result was collapsed across all hematologic malignancies, did not encompass the entire cohort, and did not address possible confounders; we anticipate our estimates will be different taking these factors into account. DISCUSSION/SIGNIFICANCE: Our work will be the first steps in creating a validated tool to understand disease acuity and severity. By using this tool to characterize presentation by disease type and age, we will identify unmet needs prior to an initial diagnosis of cancer. Our findings inform strategies toward narrowing age disparities in outcomes for AYA hematologic cancers.

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Examining the Feasibility and Acceptability of Data-Driven Outreach Using Geographic Information Systems to Address Racial Disparities in Fatal Opioid Overdose

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OBJECTIVES/GOALS: This project examines the initial feasibility, acceptability, and appropriateness of using population-health data and geospatial information systems (GIS) technology to guide opioid overdose prevention in a Black community facing increasing racial inequities in fatal overdose since 2016. METHODS/STUDY POPULATION: We applied a mixed-methods approach, using GIS to examine hot spots of fatal opioid overdose among Black, adult decedents in St. Louis City and County, Missouri, derived from cause-of-death data from the Medical Examiner's Offices from 2016-2021 (N = 1,612). Hot spot analysis was conducting using the Getis-Ord Gi* statistic. We then conducted a focus group with community-based providers in Black neighborhoods (N = 8) to assess the acceptability and appropriateness of mapping overdose data and to determine the utility of GIS for guiding decision-making in outreach activities aimed at overdose prevention. The focus group was recorded and transcribed for analysis to extract themes. RESULTS/ANTICIPATED RESULTS: Among 340 census tracts in the St. Louis region, 41 were statistically significant hot spots, indicating high clustering of fatal overdose. All hot spots were clustered together in North St. Louis, an area characterized by high racial and income segregation. Focus group participants reported potential pitfalls of GIS, including data inaccuracy for Black individuals and unwanted attention in hot spot areas (e.g., increased policing). Potential benefits included improved care coordination between organizations, assessing effectiveness of outreach interventions, and improving community-level awareness. Hyper-local neighborhood rather than regional maps were perceived as useful for outreach. DISCUSSION/SIGNIFICANCE: Artifacts of structural racism that drive Black opioid overdose deaths limit the utility of GIS to guide outreach in communities facing this systemic disinvestment. However, neighborhood-level GIS may serve as a tool for communities to build awareness and collaboration toward overdose prevention.

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Explaining Research to Children and Adolescents

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OBJECTIVES/GOALS: By establishing a youth-centric web-app as a central hub of information and inspiration in an attempt to engage a young demographic, this project aims to increase community awareness and reduce misconceptions surrounding clinical trials, in hopes of fairly representing marginalized communities among future clinical trial participants. METHODS/STUDY POPULATION: We designed a children's web-app to host a collection of child-friendly educational materials (such as picture books, games, and age-appropriate articles about advances in clinical research) explaining clinical research and its process. An emphasis was put on ensuring the web-app and its contents were understandable and appealing to children. The effectiveness of this tool will be tested through a focus group study. Children ages 7-10 will be given a preliminary survey measuring their knowledge and opinions about clinical research, and then given time to explore the web-app. Afterwards, they will be given a secondary survey to gauge their acquired knowledge from the website and asked about their opinion on the design and usability of the web-app and its materials, as well as how likely they were to revisit the site. RESULTS/ANTICIPATED RESULTS: We anticipate a very positive response from the children regarding the design and usability of the web-app and its materials. By using an