middle-aged women will be included (using the PRISMA checklist). Data extraction: two reviewers independently extracting pertinent data (using the STROBE checklist). Quality assessment and risk of bias: The quality of each study will be assessed according to the Quality Assessment Tool for Observational Studies. RESULTS/ANTICIPATED RESULTS: This meta-analysis of 36 studies evaluated the proportion of successes across various populations, with a pooled proportion of 0.02 (95% CI: 0.01–0.02) based on a random-effects model. Significant heterogeneity was identified (I^2 = 88.12%), reflecting notable variability between studies. Despite this, the overall effect was statistically significant (p = 0.00). A subgroup analysis will be conducted to explore potential sources of heterogeneity, considering factors such as cancer stage, diagnostic methods, surgical approach (conventional or robotic), and study type (retrospective/prospective). DISCUSSION/SIGNIFICANCE OF IMPACT: By identifying the prevalence of, and the risk factors for, PSM, this study will better inform personalized treatment approaches, surveillance strategies, and surgical decision-making to improve patient-related outcomes and long-term survival in women with gynecological malignancies.

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Telehealth utilization patterns among patients with multiple chronic conditions in Arkansas

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OBJECTIVES/GOALS: Patients with multiple chronic conditions (MCCs) face care coordination challenges and poorer health outcomes. Outpatient telehealth may be an effective way to enhance MCC patient care given the need for multiple visits and specialists. This study seeks to describe telehealth utilization between 2013 and 2023 in Arkansas. METHODS/STUDY POPULATION: We utilized the Arkansas All-Payer Claims Database (APCD) to identify patients diagnosed with high-prevalence MCCs comprising diabetes with comorbid hypertension, hyperlipidemia, or asthma. We then measured telehealth utilization defined as any claim associated with a telehealth modifier code, a place of service code defining the service as occurring in the patient's home, or remote patient monitoring. Finally, we created payer-specific (e.g., commercial or Medicaid) yearly measures of the number of any telehealth claims among MCC patients divided by the number of MCC patients for that year. Linear regression was used to measure the difference in utilization during the COVID-19 pandemic (i.e., 2020–2023) versus prior to the pandemic (i.e., 2013–2019). RESULTS/ANTICIPATED RESULTS: Overall, the COVID-19 pandemic era was associated with an increase of telehealth utilization among commercial patients by 1.01 telehealth claims per MCC patient (95% CI: 0.39 to 1.62, p DISCUSSION/SIGNIFICANCE OF IMPACT: Variations in telehealth uptake among MCC patients suggest heterogeneity in its suitability and necessity. We will later evaluate whether telehealth use is associated with different levels of inpatient and emergency department utilization. We expect the findings to provide clarity on the suitability of telehealth use by MCC disease status.

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Investigating gene regulatory mechanisms associated with B-cell acute lymphoblastic leukemia incidence in Hispanic/Latino populations

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OBJECTIVES/GOALS: Investigating the B-cell acute lymphoblastic leukemia (B-ALL)-associated germline SNP rs7090445, located in intron 3 of ARID5B, which is more frequently observed in individuals of Hispanic/Latino descent. Investigating the mechanisms behind this inherited single nucleotide polymorphisms (SNP) that may contribute to the higher incidence of B-ALL in this population. METHODS/STUDY POPULATION: Specific Aim 1: We hypothesize ARID5B SNP rs7090445 disrupts intrinsic enhancer function. Identification of critical DNA looping events impacted by ARID5B variants using Capture C. Affinity purification-mass spectrometry to identify potential ARID5B transcription mediators. Specific Aim 2: We hypothesize the B-ALL-associated SNP leads to a partial human B-cell differentiation block. Utilize Cas9-mediated homology-directed repair to create ARID5B SNP in primary human hematopoietic stem cells. Gene-edited HSCs will be differentiated into B cells using an ex vivo system. Fluorescence-activated cell sorting to sort our pool of cells into stages of B-cell development spectrum. Amplicon sequencing and variant allele frequency of rs7090445 SNP to evaluate its impact on B-cell development. RESULTS/ANTICIPATED RESULTS: This proposal is conceptually innovative as it seeks to understand the mechanism by which the B-ALL-associated SNP rs7090445 in intron 3 of ARID5B disrupts enhancer function and investigates its impact on human B-cell development. Future research will investigate a tumor-suppressive role of ARID5B and whether it constitutes a "first-hit" of leukemogenesis. DISCUSSION/SIGNIFICANCE OF IMPACT: Successful completion of this research will elucidate the critical role of the B-ALL-associated ARID5B SNP rs7090445 in human B-cell development and leukemogenesis. As this SNP is more prevalent in Hispanic/Latino populations, it will also provide crucial insights into the genetic factors behind the elevated incidence of B-ALL.

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Neighborhood factors and ADHD

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OBJECTIVES/GOALS: This project investigates how early childhood neighborhood factors influence attention-deficit/hyperactivity disorder (ADHD) outcomes in adolescence. Poor neighborhood conditions have been linked to higher ADHD rates; however, the effects of these factors on academic achievement, social relationships, and risk-taking behaviors remain understudied. METHODS/STUDY POPULATION: A large, diverse, harmonized, cleaned

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dataset from a national multisite research program (Environmental Influences on Child Health Outcomes (ECHO)) will be used. Neighborhood factors will be measured using geocoded, census-level indices of neighborhood quality: the Child Opportunity Index 3.0. Adolescent outcomes include self and caregiver-reported measures of comorbid psychopathology, risk-taking behavior, and academic and social functioning. A series of regression analyses will be conducted to examine the relationship between these variables. An estimated 6000 children are expected to be included in the analyses. RESULTS/ANTICIPATED RESULTS: We expect that poorer neighborhood conditions, particularly low social and economic resources, will be associated with lower overall functioning in adolescence, and that this relationship will be stronger among adolescents with ADHD relative to those without ADHD. DISCUSSION/SIGNIFICANCE OF IMPACT: By identifying risk and protective factors, this project will help identify potential prevention and treatment targets for a substantial number of youth and may inform policy efforts to improve resource equity and reduce existing disparities.

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Prevalence of tinnitus in Puerto Rican adults: A pilot study

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OBJECTIVES/GOALS: (1) Conduct a pilot study documenting prevalence of tinnitus in a sample of Puerto Rican adults at the Audiology Clinic of the Medical Sciences Campus-University of Puerto Rico, (2) categorize patterns of tinnitus, (3) document intervention received for tinnitus, and (4) study sociodemographic characteristics of Puerto Rican adult participants with tinnitus. METHODS/STUDY POPULATION: A descriptive retrospective study was performed reviewing 121 clinical records of patients seen at the Audiology Intramural Clinic of the Medical Sciences Campus of the Universidad de Puerto Rico between 2022 and 2023. They were analyzed to determine the prevalence of tinnitus among this cohort. The study was submitted to the Office of Human Participants for revision and approval under the exempt category. The data were used to categorize the type of tinnitus, episodic versus constant, tonal versus non-tonal and the sociodemographic description of the sample. RESULTS/ANTICIPATED RESULTS: From these 121 records, 70.2% (n = 85) were females and 29% (n = 29.8) were males. Subject ages ranged between 21 and 65 years. About 30% reported being single 30.6% (n = 37), followed by 21.5% (n = 26) reporting being married. From the 62 revised clinical records of subjects that reported tinnitus, 24% (n = 29) classified their tinnitus, in terms of how long they experience its presence, as constant, while 14% (n = 17) classified their tinnitus as intermittent. From the 62 revised clinical records, 44 participants (36.4%) described their tinnitus as tonal and 64.6 % as a complex sound of those patients 38 (31.4%) reported the tinnitus as a high-frequency pitch sound. Of the 62 patient records, the majority (98.4%) informed that they never received the treatment for tinnitus. DISCUSSION/SIGNIFICANCE OF IMPACT: The results indicate that more than half of adults evaluated in the UPR Audiology Intramural Clinic (51%) had tinnitus. Age range was broad developing at any age but most prevalent in middle-aged females. Manifested permanent as a tonal or a complex sound. About 98.4% informed that they never received treatment, therefore, there is a need to ensure intervention.

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Feasibility and efficacy of a 12-week whole foods diet Intervention to reduce hemoglobin A1c in adults with prediabetes and improve diet quality in families: Trial design and methodology

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OBJECTIVES/GOALS: We will conduct a 12-week pilot randomized controlled trial (RCT) to test the feasibility, acceptability, and preliminary efficacy of a staged-intensity whole foods intervention on hemoglobin A1c (HbA1c) change in adults, diet quality change (via the 2020 healthy eating index [HEI-2020]) in adults and offspring, and diet adherence and social determinants of health (SDOH) considerations via focus groups. METHODS/STUDY POPULATION: In this two-arm, parallel RCT, 30 adults with prediabetes (25–59 years) and their offspring (6–18 years) will be randomized to receive the 1) 12-week whole foods intervention which includes a 2-week feeding period (all foods/recipies provided), a 6-week customizable feeding period (3 dinners/recipies weekly), and a 4-week maintenance period (no food/recipies). The control group will receive standard of care (i.e., single RD-led diet counseling session). Primary outcomes include feasibility (≥80% retention and completion of study outcome measures) and acceptability (≥75% adult self-reported diet satisfaction). Intervention effects include 1) HbA1c change at 12-weeks in adults and 2) adult/offspring HEI-2020 scores assessed via diet records. Focus groups will assess influences of SDOH on diet adherence. RESULTS/ANTICIPATED RESULTS: We have received Institutional Review Board approval, and recruitment is planned for January 2025. We will enroll 30 families from the greater Nashville, TN area. An intent-to-treat analysis will be conducted to test the preliminary effects of the whole foods diet intervention on the 12-week change in HbA1c (adults only) and 2020-HEI diet quality scores during the intervention period (adults and offspring). Focus groups will be conducted to understand how individual and family needs/preferences and SDOH may be perceived barriers or facilitators of diet adherence. Data generated from this study will be used to guide a fully powered RCT of our whole foods intervention to assess long-term effects on additional diabetes and metabolic outcomes and assessment of SDOH influences to support long-term adherence. DISCUSSION/SIGNIFICANCE OF IMPACT: A healthy diet pattern is an effective nonpharmacological solution to prevent T2D,

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