ANTICIPATED RESULTS: This research will lead to new understanding of critical maternal recovery support factors for sustaining treatment retention for 6-12 months after childbirth and to improve long term maternal health outcomes. DISCUSSION/SIGNIFICANCE: The recovery journey and postpartum period are challenging and lack specific recovery support evidence. Recovery support and continuity of care protocols are unclear after childbirth. Maternal opioid-related overdose deaths occur 6-12 months after childbirth. Therefore, this study will impact and inform recovery retention strategies.

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An Interdisciplinary Approach to Studying the Mitochondrial Toxicity of Prenatal PAH Exposure*

Sarah McLarnan, Allison Kupsco, Tessa Bloomquist, Kathryn DeSantis, Julie Herbstman, Brandon Pearson
Mailman School of Public Health, Columbia University

OBJECTIVES/GOALS: This study models a framework for integrating epidemiological and experimental approaches to investigate the effect of prenatal polycyclic aromatic hydrocarbon (PAH) exposure on mitochondrial function (mtDNAcn, superoxide production and membrane potential) as a potential mechanism of toxicity. METHODS/STUDY POPULATION: The epidemiological aim of this study characterizes mitochondrial outcomes in samples of umbilical cord tissue and blood from two Manhattan based birth cohorts. Prenatal PAH exposure is quantified using silicone wristbands worn for 48 hours during the third trimester of pregnancy. Experimentally, we are applying a PAH mixture designed to emulate the exposure profile of the human cohorts to mouse preimplantation embryos on various dosing schedules and quantifying the same mitochondrial outcomes. mtDNAcn is quantified using rtPCR while superoxide production and membrane potential are measured using fluorescence microscopy. The goal of this study design is to leverage the strengths of each approach to draw more robust conclusions than could be derived from either alone. RESULTS/ANTICIPATED RESULTS: Preliminary results of this study have found associations between higher levels of PAH exposure and increased mitochondrial superoxide production and hyperpolarization of the mitochondrial membrane potential in mouse preimplantation embryos. We anticipate these findings to persist across dosing schedules. We furthermore expect a decrease in mtDNAcn in association with higher PAH exposure in umbilical cord tissue samples and decreased mtDNAcn with exposure to the PAH mixture in mouse embryos. DISCUSSION/SIGNIFICANCE: Characterizing the effect of prenatal PAH exposure on the mitochondria is a critical step in understanding the mechanisms that underlie the toxicity of this exposure. By employing a similar exposure mixture and mitochondrial outcomes across epidemiological and experimental approaches, we offer a model of true interdisciplinary research design.

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Association of Non-Alcoholic Fatty Liver Disease (NAFLD) with Mild Cognitive Impairment (MCI) in Aging Hispanics

Antonio Miranda-Enchautegui[1], Claudia Amaya-Ardila[1], Loscar Santiago-Rivera[2], Valerie Wojna[3], Vanessa Sepulveda-Rivera[3]
[1]School of Health Professions of the University of Puerto Rico
[2]Caribbean Healthcare System;, [3]School of Medicine, Medical Sciences Campus, of the University of Puerto Rico

OBJECTIVES/GOALS: Non-alcoholic fatty liver disease increases with aging and may be associated with MCI. Thus, adults >65 years with NAFLD have a greater risk of MCI. Our objective is to associate NAFLD with MCI and, therefore, optimize the management of MCI through prevention strategies and early interventions. METHODS/STUDY POPULATION: We will recruit 100 patients >65 of all sexes from the GI and Geriatrics clinics of the University of Puerto Rico (UPR). NAFLD prevalence in aging adults will be estimated via ICD-10 codes and definition will be liver fat accumulation or steatosis (AASLD) without secondary causes. We will exclude patients RESULTS/ANTICIPATED RESULTS: We expect to find a higher NAFLD prevalence in aging adults >65 years old compared to younger ones. Furthermore, we aim to elucidate an association of NAFLD with MCI in aging adults. Besides, as the literature has shown, we anticipate that the main cognitive domains affected by NAFLD will be the visuospatial and executive functions. As the population ages, this study will help identify future targets for early interventions in people diagnosed with NAFLD that could have a greater risk for cognitive impairment. DISCUSSION/SIGNIFICANCE: To our knowledge, no study has determined the association of NAFLD with MCI in Hispanics >65 in PR. Raising awareness of NAFLD as a possible treatable or preventable risk factor for MCI by screening NAFLD patients for MCI may improve not only their global health but their quality of life as well.

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BERD Challenges and opportunities in the new translational science landscape

Roy T. Sabo, Melanie Bean, Lauren D. Harris
Virginia Commonwealth University

OBJECTIVES/GOALS: The goal of this presentation is to highlight the role of and challenges to the Biostatistics, Epidemiology and Research Design (BERD) Core as it transitions into (i) the resources and services module (ii) and also possibly a regional center of translational science. METHODS/STUDY POPULATION: BERD cores play key roles in translational research missions, often in the form of long-term collaborative relationships focusing on project conception and design, interim monitoring and review, analysis and dissemination. The resources and services module encourages consolidation of all resources and services under the single modular umbrella, which can pose challenges to BERD autonomy and function. CTSAs transitioning from local to regional centers can also threaten to overwhelm BERD workloads and resources. Our CTSA planned an outsource-insource model to make the BERD a central feature of the new module and transplant its functionality to partner institutions. RESULTS/ANTICIPATED RESULTS: The team has planned a centralized, web-based entry-point for both self-guided inquiry and electronic requests of all resources and services, which aides project database creation and provides notification for review. The review process adds two new approval types: guided assistance to help navigate connections to relevant resources, and triaged referrals to training modules for remediation and skills development. Our BERD has added a Consulting Laboratory for projects of sufficient but non-priority merit that would otherwise be waitlisted, and established connections with regional partner institutions to whom they can refer investigators. DISCUSSION/SIGNIFICANCE: We have consolidated all resources and services into a single, accessible location, emphasizing tailored guidance to maximize limited resources. We also planned a transportable regional model that accounts for local resources and capacity to keep from overstretching the BERD and other hubs.