Harold Amos Medical Faculty Development Program

Name: Jasmine L. Travers, PhD, RN

Institution: New York University Rory Meyers College of Nursing

Mentor(s): Bei Wu, PhD; Patricia Stone, PhD, RN, FAAN; Nicholas Castle, PhD

College: Adelphi University

Medical/Dental/Nursing PhD School: Columbia University

Fellowship: University of Pennsylvania

Fellowship: Yale University

Title of Project: Promoting Health Equity and Eliminating Health Disparities in Nursing Home Quality Measures

This project builds on previous NIH-funded pre- and postdoctoral research and aims to evaluate disparities in quality care among nursing home (NH) residents after federal regulatory changes in 2017. Health disparities are racial/ethnic differences in the quality of healthcare that are not due to clinical needs, preferences, and appropriateness of interventions. By evaluating health disparities in NH quality care measures through the use of rigorous analytical methodologies, I might be able to develop effective interventions aimed to eliminate disparities in the next steps of my program of

research. Informed by the National Quality Framework Roadmap to eliminate health disparities related to quality measurement strategies, the specific aims of this proposal are: 1) Identify racial/ethnic differences in NH quality care measures pre and post 2017 revised regulations for inspections, and 2) Identify differences in quality care measures among NHs by proportion of Black residents pre and post 2017 revised regulations. Through the use of novel methods to evaluate health disparities, findings will contribute to the evidence-base regarding methodically generated, culturally appropriate interventions that can lead to better care for older adults nationally. Additionally, by ensuring the time and support needed to solidify my program of research, this award will advance me towards becoming an independently funded nurse scientist seeking to promote health and reduce health disparities.

Harold Amos Medical Faculty Development Program

Name: Mehret Birru Talabi, MD PhD

Institution: University of Pittsburgh

Mentor(s): Sonya Borrero MD MS and Megan Clowse MD MPH

College: Kenyon College

Medical/Dental/Nursing PhD School: University of Pittsburgh School of Medicine and Graduate School of Public Health

Residency: UPMC Internal Medicine

Fellowship: Rheumatology, UPMC

Title of Project: Optimizing Patient-Centered Family Planning Care for Patients with Rheumatic Diseases

**Background/Purpose:** While rheumatologists in several descriptive studies have acknowledged the importance of family planning in their care of women with rheumatic diseases, they have also identified key barriers to this care, including time constraints, competing priorities, and inadequate communication with women’s health providers. We conducted a series of focus groups composed of rheumatologists and rheumatology advanced practice providers (APPs) to synthesize their ideas for potential tools and solutions to overcome these barriers within the rheumatology clinical setting.

**Methods:** Semi-structured qualitative focus groups were conducted with rheumatologists (N=3 groups) and APPs (N=2 groups). Trained independent qualitative analysts conducted the focus groups via Zoom video conferencing. Discussions were transcribed and two trained research coordinators developed a content-based codebook. They applied the codebook to transcripts, and discrepancies adjudicated to full agreement with the principal investigator. Differences in codes between the groups by provider type were also identified. The codes were synthesized and used to conduct a thematic analysis.

**Results:** A total of 22 clinicians participated in the study, most of whom were women (75%) working within academic practice settings (60%). Clinicians had practiced rheumatology for an average of six years (range 1-17 years). Four themes emerged from the focus groups: 1) Clinicians desired patient-directed tools and resources to educate and prepare patients to discuss reproductive health issues at the rheumatology visit; 2) Most clinicians were aware of existing reproductive health resources, but desired additional training or resources around contraception and medication safety; 3) Clinicians desired tools to facilitate contact with women’s health providers to ensure early and uncomplicated access to reproductive health care (e.g., electronic consults); 4) Clinicians were less interested in using electronic health record (EHR) reminders or alerts to support family planning care, but more interested in using pre-populated text within the EHR to include in patient notes or educational information to add to patient visit summaries. Although similar ideas were generated between the APP and rheumatologist groups, the rheumatologists were generally more interested in additional training and education (e.g., continuing medical education), whereas APPs were more interested in EHR prompts and tools.

**Conclusion:** In this study, rheumatologists and rheumatology APPs from primarily academic practice settings described tools and resources that could help them to provide more consistent and higher-quality family planning care to patients with childbearing potential. Future work will focus on the development of patient-facing tools and resources to prepare patients for family planning conversations with rheumatology clinicians. Additional educational resources are needed to address providers’ knowledge gaps around contraception and medication safety in the context of pregnancy. Finally, individual health systems and practices need to prioritize the development of accessible pathways to reproductive health care for women with rheumatic disease.

Harold Amos Medical Faculty Development Program

Name: Autumn S Ivy. MD PhD

Institution: UC-Irvine School of Medicine and Children’s Hospital Orange County

Mentor(s): Dr. Tallie Z. Baram, Dr. Marcelo Wood, Dr. Dan Cooper

College: Cal State Los Angeles

Medical/Dental/Nursing PhD School: UC Irvine School of Medicine

Residency: Pediatrics, Lucile Packard Childrens Hospital, Stanford University

Fellowship: Child Neurology, Stanford University

**Title: Neural Epigenetic Mechanisms of Early Life Adversity and Exercise Intervention**

ABSTRACT: The mammalian brain undergoes protracted postnatal development and is particularly sensitive to the enduring effects of early-life experiences. Understanding how these experiences can influence the trajectory of brain development and function throughout the lifespan could lead to the development of novel strategies to ameliorate deficits in cognitive function, both in childhood and with aging. Molecular signatures of early-life experiences can be discovered through new tools in next-generation sequencing that allow for the coupling of transcriptomic and epigenomic data from within individual neurons or neuronal populations. This approach can reveal novel epigenetic targets for intervention as well as identify temporal specificity for targeting critical periods of development. Our lab focuses on the cognitive impact of early-life exercise in the setting of typical neurodevelopment, as well as considering exercise mechanisms as interventional strategies in mouse models of early-life adversity. We recently discovered that exercised juvenile rodents exhibited improvements in long-term memory, LTP, and basal synaptic physiology that lasted into adolescence (Ivy et al., Scientific Reports 2020). We have now developed a transgenic mouse line for simultaneous analysis of both the chromatin landscape and transcriptional profile of isolated neurons in a brain subregion-specific manner. We cross NuTRAP mice (Roh, *et. al.* 2017), with an EMX-Cre line; the *Emx* gene being primarily expressed in excitatory neurons. I will present data from simultaneous CUT&RUN (Skene, *et. al.* 2018)-seq and RNA-seq experiments on hippocampal neurons isolated using exercised- and non-exercised Emx-NuTRAP mice. This innovative approach is, to our knowledge, the first attempt to use NuTRAP technology in neurons. Finally, this approach will be applied to a mouse model of early-life adversity to identify molecular targets that can be changed by an exercise experience, with the goal to buffer the consequences of the adversity on cognitive function. These experiments will give us new insight into the effects of early-life experiences on the genomic and epigenomic mechanisms underlying memory performance.

**Harold Amos Medical Faculty Development Program**

Name: Jose F. Figueroa, MD, MPH

Institution: Harvard T.H. Chan School of Public Health & Brigham and Women’s Hospital

Mentor(s): Ashish Jha, MD, MPH, Dean, Brown University School of Public Health

College: University of Houston

Medical/Dental/Nursing PhD School: Harvard Medical School

Residency: Brigham and Women’s Hospital, Internal Medicine Residency

Fellowship: N/A

Title of Project: The burden of HIV/AIDS in older adults: A growing dilemma

**Abstract for Paper #1:**

**Importance:** An increasingly older HIV population raises important questions regarding how the disease may influence spending on other chronic conditions and mental health disorders.

**Objective:** To determine the degree to which HIV influences spending and utilization related to non-HIV chronic conditions and the extent to which antiretroviral therapy (ART) mitigates this relationship.

**Design:** Using a 20% sample of Medicare claims, we compared risk-adjusted spending and utilization for Medicare beneficiaries with and without an HIV diagnosis, as well as subgroups of people with HIV on ART. Spending was calculated across five major categories: direct HIV/AIDS costs, HIV-associated conditions or other infections, mental health disorders, other chronic medical conditions, and drugs/medications.

**Setting:** United States in 2016

**Participants:** Fee-for-service Medicare beneficiaries

**Exposure:** HIV diagnosis

**Main Outcomes and Measures:** Risk-adjusted spending

**Results:** Of 4,501,339 Medicare beneficiaries, 21,564 (0.5%) had an HIV diagnosis, of which 1,974 were not on ART. On average, people with HIV were younger, more likely to be Black or Hispanic, and dual-eligible. Compared to beneficiaries without HIV ($16,219), people with HIV on ART incurred 220.6% more spending ($52,004), mostly driven by ART spending ($28,854), while people with HIV not on ART incurred 95.4% more spending ($31,689). People with HIV but not on ART had higher spending related to infections (+60.3%), mental health disorders (+85.1%), and other medical conditions (+39.2%) compared to people with HIV on ART. Months on ART was associated with lower excess spending on mental and medical conditions in a dose-response manner; people with HIV treated with at least 12 months of ART incurred similar average levels of spending as people without HIV (excluding drug costs).

**Conclusions and Relevance:** An HIV diagnosis is associated with substantially higher spending among Medicare beneficiaries, mainly driven by ART spending. Overall, Medicare beneficiaries with HIV do not spend substantially more on mental health or other chronic medical conditions after adjusting for clinical complexity, except for the subset of HIV patients not on ART. These findings suggest that ART may be associated with reduced excess spending on mental health and other chronic conditions among older people. However, high ART prices need to be addressed.

Harold Amos Medical Faculty Development Program

Name: LaPrincess C. Brewer, MD, MPH

Institution: Mayo Clinic College of Medicine, Division of Preventive Cardiology, Department of Cardiovascular Medicine, Rochester, MN

Mentor(s): Christi A. Patten, PhD; Lisa A. Cooper, MD, MPH

College: Howard University, Washington, DC

Medical/Dental/Nursing PhD School: George Washington University School of Medicine, Washington, DC

Residency: Johns Hopkins University/Johns Hopkins Bayview Medical Center Internal Medicine Residency Program, Baltimore, MD

Fellowship: Mayo Clinic Cardiovascular Diseases Fellowship, Mayo Clinic Preventive Cardiology Fellowship, Rochester, MN

Title of Project: *The FAITH! (Fostering African-American Improvement in Total Health) Trial: A community-based, mHealth Intervention to Improve Cardiovascular Health Among African-Americans*

**Background:** Compared to whites, African-Americans have lower prevalence of ideal cardiovascular health (CVH) based on the American Heart Association Life’s Simple 7 (LS7). Ideal LS7 health-promoting behaviors and biological risk factors (e.g., physical activity (PA), blood pressure) are associated with improved CVH outcomes. The FAITH! (Fostering African-American Improvement in Total Health) App, a community-informed, mobile health (mHealth) intervention, previously demonstrated significant improvements in LS7 components among African-Americans, suggesting mHealth interventions may be effective in improving CVH. **Objective:** Utilizing a community-based participatory research approach, this study assessed the feasibility/preliminary efficacy of a refined FAITH! App for promoting LS7 among African-Americans in faith communities using a cluster, randomized controlled trial (RCT). We hypothesized that our behavioral theory-informed, app-based intervention would be feasible and improve CVH among AAs in faith communities from baseline to 6-months (mos) post-intervention. **Methods:** As a part of Aim 1, we conducted three focus groups on app refinement and inclusion of user-individualized/interpersonal features. Primary outcomes are refined app satisfaction/usability by the Health Information Technology Usability Evaluation Scale (Health-ITUES). For Aim 2, participants received the FAITH! App (immediate intervention) or were assigned to a delayed intervention comparator group. Data were collected via electronic surveys and health assessments at baseline and 6-mos post-intervention. Primary outcomes were change in LS7 composite score from baseline to 6-mos post-intervention and app engagement/usability. **Preliminary Results:** A total of 15 participants were recruited for the Aim 1 focus groups (mean age (SD) 56.9 (12.3) years, 87% female). There was overall high user satisfaction with the refined app and the app exceeded the usability threshold goal to proceed to use in the RCT (Health-ITUES, mean (SD) 4.4 (0.5)). Of RCT-enrolled individuals, 76 completed baseline surveys/health assessments, for a participation rate of 89% (N=34 randomized to immediate intervention, N=42 to delayed intervention [control]). At baseline, participants were predominantly female (54/76, 71%), employed (56/76, 78%) and of high cardiometabolic risk (72/76, 95% with hypertension and/or overweight/obesity) with mean LS7 scores in the poor range (6.8, SD 1.9). From baseline to 6-mos post-intervention, the mean LS7 score of the intervention group increased by 2.1 points (SD 1.9) as compared to an increase of 0.8 point (SD 1.6) of the control group (both *P*<0.0001). When adjusted for age and education level, the estimated difference of this increase between the groups was 1.23 (95% CI 0.68-1.79; *P*<0.0001). App engagement /usability was overall high (>50% completed ≥50% education modules, >75% completed weekly diet/PA tracking, Health-ITUES, mean (SD) 4.7 (0.4)). **Conclusions:** Based on preliminary findings, the refined FAITH! App appears to be an efficacious mHealth tool to promote ideal CVH among African-Americans.

Harold Amos Medical Faculty Development Program

Name: Eugenia C. South, MD MS

Institution: Perelman School of Medicine at the University of Pennsylvania

Mentor(s): Charles Branas, PhD and Therese Richmond, PhD

College: Harvard University

Medical/Dental/Nursing PhD School: Washington University School of Medicine

Residency: Penn Medicine

Fellowship: Robert Wood Johnson Clinical Scholars Program at Penn

Title of Project: Leveraging Urban Nature to Promote Mental Health in Black Neighborhoods

**Background:** The places where people live, work, and play have a profound effect on their mental health and wellbeing. This is particularly relevant in Black neighborhoods, where historic and ongoing manifestations of structural racism serve to segregate residential environments and unequally distribute resources and risks. Black urban neighborhoods often lack quality infrastructure such as sidewalks and parks, and physical conditions such as vacant and dilapidated spaces, poor lighting, and trash are ubiquitous and unavoidable. These hazards are associated with health threats such as depression and stress. In addition, health promoting aspects the neighborhood environment – such a greenspace – is the lowest in formerly redlined, Black neighborhoods. Green space has been cited as a potential buffer between inequitable neighborhood conditions and poor health. However, there is limited evidence *how* to increase exposure to green space and *how much* exposure is needed to produce benefit. The broad objectives of this proposal are to pilot test two intervention strategies to increase green space use through the following aims:

**(SA1)** INTERVENTION DEVELOPMENT: Develop and test a person-based intervention (Nature Coach) to help people increase greenspace use.

**(SA2)** PILOT RCT: Pilot test a place-based and a person-based intervention – separately and in combination - to increase green space use and improve mental health.

**Methods:** *Aim 1.* We developed a 4-week intervention leveraging a behavioral economics framework, that included a Nature Coach, digital nudges and personalized goal feedback designed to nudge people to spend time in nearby nature. We then conducted a randomized controlled trial (RCT) among postpartum women (n=36) in Philadelphia, PA between 9/9/2019 and 3/27/2020. Nature visit frequency and duration was determined using GPS-data and mental health was measured using postpartum depression screening.

*Aim 2.* We are in the middle of conducting a factorial-designed RCT in Black neighborhoods (n=6) in Philadelphia, PA starting in 4/2021with planned completion in 8/2022. Neighborhoods were randomized to one of four arms: (a) control, (b) nature coach intervention (from aim 1), (c) community co-designed greenspace, and (d) nature coach + community greening. 73 residents have been enrolled.

**Results:** *Aim 1.* Participants were from low-income, majority Black neighborhoods. Compared to control, the intervention arm had a strong trend toward longer duration and higher frequency of nature visits (IRR 2.6, 95%CI 0.96-2.75, p=0.059). When analyzing women who completed the intervention (13 of 17 subjects), the intervention was associated with three times higher nature visits compared to control (IRR 3.1, 95%CI 1.16-3.14, p=0.025).

*Aim 2.* At baseline, participants are 64% female, 88% Black, and 66% have household incomes less than $35,000. Participants completed surveys assessing depression symptoms, resilience, and wellbeing. In partnership with a landscape architect firm, we also conducted 2-3 community meetings in each of the 3 neighborhoods receiving the community co-designed greenspace and have finalized design plans to turn previously greened vacant lots into mini park spaces.

**Next steps:** New greenspaces will be installed in Oct/Nov 2021 and we will hold a community build day in March 2022 for painting and planting. The nature coach intervention will take place in the Spring 2022. We will conduct follow up interviews with participants from April-August 2022.

**Impact of COVID-19**: We were ready to start enrolling participants in April 2020. Then COVID hit. Because of this, we postponed Aim 2 by one year.