

**Global Non-Communicable Diseases and
Disorders Research and Research Training
Programs (Global NCD) Network Virtual
Meeting Presenter Abstracts**

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Presenter Abstracts

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Carla J. Berg, Ph.D., MBA, LP; Emory-Georgia Clean Air Research & Education (CARE) Program

Grant: D43ES030927: Emory-Georgia Clean Air Research & Education (CARE) Program

Country of focus: Georgia

Talk title: Emory-Georgia Clean Air Research & Education (CARE) Program

Abstract:

Background: Globally, 7 million deaths are attributable to the joint effects of indoor and ambient air pollution annually; ~94% occur in low- and middle-income countries (LMICs). In Georgia (GE), adverse environmental exposures cause 21% of disease burden and 25% of deaths, and GE's mortality index attributed to ambient and indoor air pollution is the 3rd highest in the world.

Methods: The Clean Air Research and Education (CARE) program aims to enhance capacity in GE to conduct research related to non-communicable diseases (NCDs) and environmental health (EH) – via enhanced formal training and mentored research opportunities. CARE represents a collaboration among Emory University, George Washington University, GE National Center for Disease Control, GE National Environmental Agency, and Tbilisi State Medical University. Ongoing evaluation is conducted to monitor and enhance program quality. In January 2022, CARE leadership administered an online evaluation of the program's initial 1.5 years, using closed-ended likert-type questions and open-ended questions.

Results: To date, 8 PhD trainees and 4 MPH trainees have been enrolled; of these, 5 PhD trainees and 2 MPH trainees have completed over one year of participation. Trainees (100% response rate: n=12/12; 4 MPH, 8 PhD) and faculty (86.7% response rate: n=13/15; 7 GE-based, 6 US-based) rated factors related to mentor-mentee relationships highly, particularly mutual consideration of each other's thoughts, opinions, and perspectives; the major challenge noted was completing goals planned. Trainees and faculty identified several growth experiences and benefits of program participation (e.g., skills development, expanding professional network). However, both groups also identified challenges (e.g., meeting program demands, communication gaps, unclear expectations) – exacerbated by COVID-19.

Conclusions: Findings underscore the importance of strong mentorship relationships, and that pandemic negatively impacted communication and clarity of expectations. Given the likely ongoing impact of the pandemic on such programs, program leaders must identify ways to address these challenges.

Ilya Raskin, PI, Research Training Center for Botanicals and Chronic Diseases in Tajikistan and Indonesia

Abstract:

The expanded Research Training Center for Botanicals and Chronic Diseases in Tajikistan and Indonesia (CBCD) provides training across a spectrum of research disciplines from basic biomedical and botanical to clinical and applied sciences. We aim to link traditional uses of botanical therapeutics with the state-of-the-art research capabilities of the participating US institutions. The program focuses on inflammation-associated chronic diseases (diabetes and metabolic syndrome, cardiovascular diseases, osteo- and rheumatoid arthritis, and intestinal and neurological disorders) providing research training with an emphasis on an anti-inflammatory botanical from local plants. CBCD includes Rutgers University, Pennington Biomedical Research Center/Louisiana State University and Eugenio María de Hostos

Community College (part of the City University of New York), four Tajik institutions and two Indonesian Universities. CBCD's research training is built around individual projects for each trainee related to pharmacologically active botanicals. It leverages last seven years of experience in developing multifaceted, multidisciplinary, and innovative training paradigms targeted to the needs of partnering countries in merging traditional botanical medicines and western pharmacological approaches. Overall, we plan to provide in-country training for 16 Master students (all in Indonesia), 5 Ph.D. students in Tajikistan, 8 Ph.D. students in Indonesia and 5 postdoctoral fellows in in Tajikistan, including Associate trainees who are funded by the participating countries as a match to this proposal. Currently, program enrolls 8 Indonesian Master students, 13 Ph.D. students (5 in Tajikistan and 8 in Indonesia); and 4 Tajik Postdoctoral fellows. To improve learning efficiency and outreach during COVID pandemics, CBCD substantially extended its distance learning course offerings, online training seminars and mentoring activities that involve Rutgers University graduate students and postdoctoral associates. We currently offer 4 training cores that include 12 asynchronous, online courses and multiple supplementary training modules. Since 2020, our past and current trainees published 15 manuscripts in peer-reviewed journals. In addition, since 2020, CBCD secured \$75,000 in leveraged international funding.

Egide Kalisa, Ph.D., Schoolchildren's Exposure to Indoor and Outdoor Air Pollution in Rwanda

Grant associated with: 1K43TW011954-01, Egide Kalisa, Children's Exposure to Indoor and Outdoor Air Pollution within the SHEAR Project in Rwanda

Country of focus: Rwanda

Abstract:

Air Pollution exposure is a particular concern in Africa, where there is a high density of ageing diesel vehicles and cooking emissions from open fires and stoves fueled by biomass burning. Children are highly susceptible to air pollution health impacts due to their high breathing rates, developing lung structures and immature immune systems; thus, they are a population of interest when assessing air pollution impacts. School sitting policies to protect children from air pollution have been established in developed countries, not in Africa. This is due to a lack of monitoring and scientific understanding of the sources contributing to school air pollution, which is essential to formulating effective air pollution control policies. In Rwanda, the study quantifies indoor and outdoor air quality during school hours and found that air pollution concentrations in classrooms exceeded global standards and guidelines. Air pollutants were found to be elevated at school during morning drop-off and afternoon pick-up times. Classrooms in Rwanda do not have ventilation or air-cooling, thus implementation of the drop-off programs with a safe distance away from the school entrance will reduce children's exposure to air pollution. Air pollution education can influence children's behaviour and minimize their risk to air pollution and improve their respiratory health.

Philip Furspan, Ph.D., Expansion of NCD Research Capacity in Thailand with Outreach to Indonesia

Grant: D43TW009883-07, Kathleen Potempa, Expansion of NCD Research Capacity in Thailand with Outreach to Indonesia

Countries of Focus: Thailand and Indonesia

Abstract:

The primary goal of this grant is to extend and deepen the non-communicable disease (NCD) research capacity building in Thailand, and expand this work into Indonesia, with a focus on the growing diseases and health conditions related to aging populations (<https://d43postdoctorate.umichsites.org/>). The Praboromarajchanok Institute for Health Workforce Development (PIHWD) in Thailand and the University of Michigan School of Nursing (UMSN) have worked together on post-doctoral training in NCD since 2011. Our overall goal is to rapidly increase the number of NCD research projects with an emphasis on understanding the age-related factors associated with the rise in NCDs and to determine ways to offset this rise through early intervention. Despite the pandemic, we have continued our training program through virtual means. Since 2020, our Summer Institute (June – August) has been offered all virtually from the University of Michigan campus using Zoom technology. Post-doctoral fellows are enrolled in coursework that accommodates the time zone differences, meet with their mentors weekly, and conduct literature searches and projects utilizing the UM Library and other resources through online methods. From September through May each year, the fellows work with their in-country mentors' research team in consultation with the UM mentors. Since our D43 renewal in 2019, we have admitted 16 post-doctoral fellows into the program. Currently, we have six second-year and six first-year fellows: of these, 8 are from Thailand and 4 from Indonesia.

Main recent publications:

Potempa, K., Rajataramya, B., Singha-Dong, N., Furspan, P., Kahle, E., & Stephenson, R. (2022). Thailand's Challenges of Achieving Health Equity in the Era of Non-Communicable Disease. *Pacific Rim international journal of nursing research*, 26(2), 187.

Potempa, K., Furspan, P. B., Rajataramya, B., Barton, D., & Singha-Dong, N. (2018). Strengthening non-communicable disease research capacity in Thailand: leveraging PhD nurses and other health professionals. *Pacific Rim international journal of nursing research*, 22(3), 178.

Potempa, K., Rajataramya, B., Barton, D.L., Singha-Dong, N., Stephenson, R., Smith, E.M., Davis, M., Dinov, I., Hampstead, B.M., Aikens, J.E. and Saslow, L., Furspan, P., et al. 2019. Impact of using a broad-based multi-institutional approach to build capacity for non-communicable disease research in Thailand. *Health research policy and systems*, 17(1), pp.1-6.

Lydia Akino, Determining the Role of Structural Pathophysiology in Atrial Fibrillation

Grant associated with: 1D43TW012260-01, Andrew Rollins, Strengthening Research Capacity in Innovative Global Health Technologies for Non-Communicable Diseases in Uganda

Country of focus: Uganda

Abstract:

The global burden of Atrial fibrillation (AF) increases with each passing year and is expected to double in the next 40 years. Despite its prevalence, the mechanisms of AF remain not fully understood and treatment options have a limited efficacy. Understanding these mechanisms will be key in the improvement of treatment and management of AF. Atrial remodeling has been shown to contribute to electrical, structural, and mechanical changes in the atria leading to initiation and maintenance of AF. Targeted interventions like catheter ablation are used to treat the effects of atrial remodeling and restore normal sinus rhythm; however, in vivo identification of structural pathophysiology that causes AF remains a challenge. My research focuses on

understanding the role of structural pathophysiology in atrial fibrillation using optical mapping (OM) to measure atrial electrophysiology and polarization-sensitive optical coherence tomography (PSOCT) to identify structural pathophysiology (e.g., fibrosis, adipose tissue). AF is created in a large animal model by rapidly pacing the atria using a pacemaker. Once persistent AF is established, isolated atria are studied ex vivo using OM and PSOCT.

Niharika Jha, MPH-Global Health, The methodology on assessing nutrition transition from 2012-2022 and its association with body mass index among participants of the Dhulikhel Heart Study, Nepal

Grant associated with D43TW011596, Annette Fitzpatrick, \$1,643,127 for 5 years. Role: Trainee. Building Capacity to Address the Burden of Cardiometabolic Risk Factors and Diseases in LMICs

Country of focus: Nepal and Kenya

Personal/Lab website: researchgate.net/profile/Niharika-Jha-2

Abstract:

Almost every country in the world have drastically shifted into the stage of the nutrition transition marked by high consumption of ultra-processed foods during the previous three to four decades. Rapid rises in the prevalence of overweight-obesity and other nutrition-related noncommunicable diseases (NCDs), such as diabetes, hypertension, and other elements of coronary heart disease, are associated with this stage. Obesity has increased worldwide, which is one of the most critical and serious consequences of the dietary change. This longitudinal assessment of food consumption and health status, including BMI, provides the opportunity to evaluate changes in nutrition over a 10-year period and its impact on Cardiometabolic health. This study is a longitudinal retrospective study and utilize secondary data from the Dhulikhel Heart Study (DHS) conducted in the year 2012 and the second phase of DHS which is started in 2021 and currently going on. Inclusion criteria for the DHS was being a permanent resident of Dhulikhel or residing in Dhulikhel for at least six months at time of being surveyed. This retrospective study is using the data from the specific section "Food and Nutrition" and "Anthropometric assessment". Around a third of the households ($n=735$) were randomly selected and stratified by ward (nine administrative divisions) during DHS. Descriptive statistics on demographics will be presented by gender using means/standard deviations for continuous variables and counts/percentages for categorical variables. Scientific nutrition transition score system will be used to compare the nutrition transition from 2012 to 2022 among the participants. Multivariate regression analysis will be used to show the relation between nutrition transition and BMI of the DHS participants.

Main recent publications:

Shrestha A, Parajuli SB, Aryal A, Shrestha A, Maharjan R, Jha N. Status of Health Financing on Cardiovascular Diseases in Nepal-Findings from a National Needs Assessment. Kathmandu Univ Med J. 2021:58-67.

Thapa B, Sharma S, Shrestha A, Maharjan R, Jha N, Bajracharya S. Human Resources for Cardiovascular Disease Management in Nepal: A National Need Assessment. Kathmandu Univ Med J. 2021:3-10.Co-author, 'Needs Assessment of Leadership and Governance in Cardiovascular Health in Nepal'

Shrestha A, Maharjan R, Karmacharya BM, Bajracharya S, Jha N, Shrestha S, Aryal A, Baral PP, Bhatt RD, Bhattarai S, Bista D. Health system gaps in cardiovascular disease prevention and management in Nepal. BMC health services research. 2021 Dec;21(1):1-3.

Halima Bello-Manga, MBBS, MPH, Increasing Access to Stroke Prevention for Children with Sickle Cell Anemia in Kaduna, Nigeria

Grant number: 5K43TW011583-02; Halima Bello-Manga; Primary Prevention of Stroke In Children With Sickle Cell Anemia In Nigeria: Community vs Teaching Hospital

Country of focus: Nigeria

Abstract:

Stroke is a devastating complication of sickle cell anemia (SCA) still occurring in approximately 11% of children affected with the disease in resource-limited countries, compared to 1% in high-income countries. In Nigeria, the country with more than 50% of the global burden of SCA, screening for at risk children using transcranial Doppler ultrasound (TCD) measurements is limited to tertiary hospitals. This mentored award is focused on initiating a stroke prevention program in a resource-limited community hospital by task shifting of TCD screening to nurses, a strategy that is expected to increase access for affected children with prompt institution of a primary prevention strategy for those with increased stroke risk. Our objectives include to; i) Identify barriers and facilitators that influence the adaptability of the transported evidence based practice (EBP) intervention, including implementation process (year 1); ii) Build capacity for stroke detection and prevention in SCA in a community hospital by training nurses on the conduct of TCD and stroke detection; iii) Conduct a feasibility trial comparing the effectiveness of a physician-based primary stroke prevention program in an academic site to a task-shifted primary stroke prevention program in a community site. This study is being conducted at two sites (Teaching Hospital and Community Hospital) in three phases using both quasi-experimental and effectiveness-implementation study designs. The phases include; i) Needs Assessment; Capacity Building and Implementation phases. We have completed the needs assessment phase and currently conducting TCD training and stroke education for nurses in the Community Hospital. Enrolment for the implementation phase will commence as soon as the nurses are certified on TCD training and stroke detection.

Main publications include:

Bello-Manga H et al. Translating Research to Usual Care of Children with Sickle Cell Disease in Northern Nigeria: Lessons Learned from the SPRING Trial Team. BMC Res Notes. 2022 Jan 4;15(1):1. doi: 10.1186/s13104-021-05885-1.

Bello-Manga H, Haliru L, Ahmed AK et al. Primary Prevention of Stroke in Children with Sickle Cell Anemia in Nigeria: Protocol for a Mixed-Methods Implementation Study in a Community Hospital. JMIR Research Protocols (Accepted Apr 26,2022)

Yetunde Alo, B.Sc., Investigating HIV as a risk factor for clonal hematopoiesis of indeterminate potential in a Nigerian cohort

Grant associated with: K43TW011926, Kolapo Oyebola, Prevalence and temporal dynamics of clonal mutations associated with the risk of hematological cancer in a cohort of clinically healthy Nigerians.

Country of focus: Nigeria

Personal/Lab website: <https://www.github.com/cegrib>

Abstract:

Clonal hematopoiesis of indeterminate potential (CHIP) is marked by the age-related acquisition of somatic mutations in hematopoietic stem cell genes at a variant allele frequency (VAF) of more than 2%. CHIP confers increased risk of hematological malignancies, cardiovascular

diseases and all-cause mortality. People living with human immunodeficiency virus (PLWH) have an increased risk of cardiovascular diseases (CVD) due to inflammation and immune dysregulation which are hallmarks of CHIP. It is suspected that there is an earlier onset and an increased burden of CHIP among PLWH compared to normal-aging individuals. In this study, we will determine the prevalence of CHIP in a Nigerian PLWH cohort and assess the progression of CHIP over a three-year period. We will carry out a retrospective analysis of a cohort of 401 PLWH at the Nigerian Institute of Medical Research. The PLWH individuals will be age, gender and ethnic-matched with a control cohort of 401 HIV-negative individuals (HNI). Blood samples collected from the PLWH and HNI will be used for DNA extraction. Subsequently, we will sequence 54 genes associated with myeloid leukemia using the TruSight Myeloid Sequencing Panel to determine the burden of CHIP in each person. In parallel, CD4 counts and RNA viral load will be estimated per PLWH individual. Comparative analyses will be carried in RStudio. Early and pre-disease detection of CHIP in PLWH offers important prediction of the risk of CVD and all-cause mortality and provides information on potential targets of therapeutic interventions.

Cassandra Bryan, MPH, Impact of cavitory lung lesions on post-tuberculosis quality of life among successfully-treated patients in Georgia

Grants associated with: R21TW011157, Maia Kipiani, Pulmonary Impairment after TB Treatment

Country of focus: Georgia

Abstract:

Background: Although post-tuberculosis (TB) lung disease (PTLD) is common after TB treatment completion, the relationship between PTLD and quality of life (QOL) is poorly understood.

Objective: To compare changes in post-TB QOL among TB survivors with and without cavitory lung lesions at treatment completion.

Methods: We conducted a cohort study of successfully treated, pulmonary TB survivors in Tbilisi, Georgia. Cavitory lesions were measured by computed tomography at treatment completion. QOL was measured at treatment completion and 6 months later using the 20-Item Short Form Survey (SF-20). Change scores for each SF-20 domain were calculated and dichotomized into “any” or “no improvement” in QOL. We used log binomial regression to calculate risk differences (RD) and adjusted risk ratios (aRR) for the association between cavitory lesions and improvement in QOL.

Results: We enrolled 120 TB survivors, of whom 31 (26%) had cavities at treatment completion. Overall, 37 (31%) had no improvement in their total QOL score within 6 months post-TB. Among patients with cavities, 3 (10%) had improved bodily pain scores compared to 30 (34%) among those without cavities (RD -0.2; 95%CI -0.4, -0.1); this difference remained significant after adjusting for sex and age (aRR 0.3; 95%CI 0.1, 0.9). Compared to those without cavities, those with cavities trended towards less improvement on role functioning (aRR 0.6; 95%CI 0.2, 1.4), social functioning (aRR 0.4; 95%CI 0.1, 1.4), and health perception (aRR 0.7; 95%CI 0.4, 1.1).

Conclusion: There was less QOL improvement among successfully treated TB survivors with cavities compared to those without cavities.

Kolapo Oyebola, Ph.D., Prevalence of age-related clonal hematopoiesis in sickle cell disease

Grant associated with: K43TW011926, Kolapo Oyebola, Prevalence and temporal dynamics of clonal mutations associated with the risk of hematological cancer in a cohort of clinically healthy Nigerians.

Country of focus: Nigeria

Personal/Lab website: <https://www.github.com/cegrib>

Abstract:

Clonal Hematopoiesis of Indeterminate Potential (CHIP) is an age-related risk factor for hematological malignancies. The presence of environmental stressors such as inflammation influences clinical trajectory of clonal cells. Sickle cell disease (SCD) is hallmarked by chronic inflammation and accelerated aging process, with earlier manifestation of end-stage hematological malignancies relative to people without SCD. Here, we investigated CHIP prevalence in a cohort of SCD patients. Four hundred and fifty-three SCD patients aged 18 – 76 years were recruited under the Secondary Pulmonary Hypertension in Adults with Sickle Cell Anemia protocol, of which 79 SCD patients were age-matched with non-SCD volunteers. Using TruSight Myeloid Sequencing Panel, peripheral blood was analyzed for acquired somatic mutations at a variant allele frequency (VAF) of 2% or higher in 54 leukemia-associated genes. There was no indication of a higher burden of CHIP variants in SCD than age-matched non-SCD individuals (Wilcoxon, $P = 0.8$). However, SCD individuals aged 50-60 years had almost 2-fold greater odds of acquiring CHIP mutations than age-matched non-SCD subjects (OR =2.16). Our results do not demonstrate increased CHIP acquisition in SCD patients compared to the general population. Considering the sample size limitation of this study, a largescale analysis of CHIP in SCD subjects with known hematological phenotypes, hydroxyurea status and underlying conditions will be required to validate the observations in this report.

Anthony Aquino, B.S., M.S. ©, Association between ultra-processed food and Cardiometabolic Risk among Peruvian adults

Grant associated with: D43 TW011601, De la Fuentes, Lisa, Research Training: Chronic Non-communicable CVDs and Comorbidities in Peru

Country of focus: Peru

Abstract:

Ultra-processed food consumption has been linked to metabolic disorders such as obesity and dyslipidemia; as well as cardiovascular diseases and diabetes mellitus type 2 among adults. In low- and middle-income countries, the consumption of ultra-processed foods is changing the dietary pattern to the detriment of natural or minimally processed foods because they increase in terms of relative energy by around 25% of total energy intake. Furthermore, the energy distribution of ultra-processed foods and their association with sociodemographic and biochemical factors in the Peruvian population is unknown. We analyzed cross-sectional data from the population-based Surveillance Nutritional and Food in Peru 2017-2018 which assess the nutritional status and dietary patterns among 1 084 adults. Preliminary findings among 765 with data complete of food consumption according to the first recall-24 hours data, 58.2% were female, the mean age was 38 ± 11.8 years, the prevalence of metabolic syndrome (three or least criteria) was 29.9%, and the mean percent of energy comprised of ultra-processed food was 14.8% (IC95%: 13.78, 16.04). In unadjusted analysis, the energy comprised of ultra-processed

food is elevated in people with metabolic syndrome in comparison to people without metabolic syndrome, furthermore, metabolic syndrome is associated with being women, older age, low education level, and elevated low-density lipoprotein cholesterol. The rate of ultra-processed food was found low; in Peruvian adults with metabolic syndrome the consumption of ultra-processed foods is associated with this condition that could predispose them to cardiometabolic diseases, also we expect that worsens the nutritional profile of macronutrients and micronutrients in the diet. More details about the adjusted model are present soon.

Eliezer Dade, MD, Treatment of Early Hypertension among Persons Living with HIV in Haiti

Grant Associated With: D43 TW011972/TW/FIC NIH HHS/United States. Dr Jean W Pape, Dr Margaret McNairy, “Cardiovascular Disease Research Training Program in Haiti” R01 HL143788/HL/NHLBI NIH HHS/United States. Dr Margaret McNairy, “A longitudinal cohort study to evaluate cardiovascular risk factors and disease in Haiti”

R21 TW011693/FIC NIH HHS/United States. Dr Margaret McNairy, “Treatment of early hypertension in persons living with HIV for cardiovascular disease prevention in Haiti”

Country of focus: Haiti

Abstract:

Haiti has the highest HIV prevalence in the Western hemisphere, with two-thirds of all cases in the capital, Port-au-Prince. However, over the last decade, cardiovascular disease (CVD) has become the leading cause of morbidity and mortality in Haiti. Globally, HIV-associated CD has tripled as people living with HIV (PLWH) are surviving longer and developing chronic diseases associated with older age, and hypertension is a major driver of CVD among PLWH. Pre-hypertension is associated with increased CD risk in PLWH, as compared to adults without HIV. Treatment of prehypertension in patients with diabetes, chronic kidney disease, and nonobstructive coronary disease decreases CVD event sand progression. Although HIV is associated with a similarly high CVD risk as diabetes, the WHO still recommends PLWH start antihypertensive treatment at the same blood pressure threshold as adults without HIV. No trial has evaluated early blood pressure treatment for PLWH. In our pilot study, we aim to assess the feasibility of initiating antihypertensive treatment among PLWH with prehypertension through a pilot randomized controlled trial comparing early hypertension treatment (initiation of amlodipine for people with hypertension) compared to standard of care.

Sally Findley, Ph.D., M.A., Adaptation of the Diabetes Prevention Program for Delivery by Community Health Workers in Bamako, Mali

Grant associated with: R21TW011736-01, Seydou Doumbia, Effectiveness of the Diabetes Prevention Program in Urban Bamako, Mali: Small Steps, Big Rewards

Country of focus: Mali

Abstract:

Problem: Diabetes Prevention Programs (DPP) have been developed and successfully implemented in the United States and other high-income countries since the 1990s. However, few adaptations have been done in low-and middle-income (LMIC) countries, home to 75% of adults with diabetes.

Methods: In Mali, the 12DPP-Power to Prevent (DPP-P2P) group sessions, handouts, and manuals for community health workers leading the sessions were converted into culturally appropriate, pictorial presentations including multiple role-plays, pictures of Malians eating local foods and exercising, and portion size adaptations of the MyPlate dietary recommendations. All session materials were translated into French, and a training program was developed for the community health workers, showing them how to translate these into Bambara and how to lead group discussions and activities. The pre-test with 19 CHWs and 45 diabetic and hypertensive patients showed intense interest in the program. After participating for one month in the sessions, participants showed significant improvements in their minutes of daily exercise, as well as reductions in overall food intake. Their feedback was used to finalize the adaptation for further testing. We reduced the amount of text in the slides and added more pictures and group activities. A separate session was added on how to involve the household head and other family members in diet change decisions. We developed a pictorial recipe booklet for health food preparations of the most common local foods, a pictorial guide and video demonstrations of the 16 recommended exercises, and pictorial tracking tools for participants to use in recording their daily consumption and exercise times.

Conclusions: This adaptation study indicated that the DPP-P2P can be adapted for delivery by low literacy implementers. The 12-session adaptation is now proceeding to the next phase of implementation, namely a clinical trial conducted at community health centers in Bamako, Mali.

Sally Findley, Ph.D., M.A. D & Seydou Doumbia, M.D., Ph.D., Early Results PPD

Grant associated with: R21TW011736-01, Seydou Doumbia, Effectiveness of the Diabetes Prevention Program in Urban Bamako, Mali: Small Steps, Big Rewards

Country of focus: Mali

Abstract:

Problem: Diabetes Prevention Programs (DPP) have been developed and successfully implemented in the United States and other high-income countries since the 1990s. However, few adaptations have been done in low-and middle-income (LMIC) countries, home to 75% of adults with diabetes.

Methods: In Mali, the 12DPP-Power to Prevent (DPP-P2P) group sessions, handouts, and manuals for community health workers leading the sessions were converted into culturally appropriate, pictorial presentations including multiple role-plays, pictures of Malians eating local foods and exercising, and portion size adaptations of the MyPlate dietary recommendations. All session materials were translated into French, and a training program was developed for the community health workers, showing them how to translate these into Bambara and how to lead group discussions and activities. Six community health centers (CSCOM) were selected with the highest number of diabetics and hypertensive patients in 2 low-income peripheral neighborhoods of Bamako, and at each CSCOM we recruited about 75 eligible patients (diagnosed with diabetes in previous 5 years or hypertensive, aged 25+). Sites were randomly allocated to 3 study arms and eligible participants were recruited: 1) Control(n=130) 2)Individual Intervention (n=122) (3) Couples Intervention to eligible participant and his/her spouse. (n=135) 43% of the spouses consented to participate in the couples intervention. At the end of the eighth session 6.7% of the participants had withdrawn from the program. Preliminary results will be discussed during the session.

Vyacheslav Dushenkov, Ph.D., A multifaceted approach to training researchers in a constantly changing world

Grant associated with: (D43TW009672, Grant contact PI Ilya Raskin, Research Training Center for Botanicals and Chronic Diseases (CBCD) in Tajikistan and Indonesia

Country of focus: France, Tajikistan, Indonesia

Personal/Lab website: <https://www.hostos.cuny.edu/Administrative-Offices/Office-of-Academic-Affairs/Departments/Natural-Sciences/Faculty-Staff/Full-time-Faculty/Vyacheslav-Dushenkov,-Ph-D>

Abstract:

COVID-19 pandemic restrictions required rapid adaptation of the Research Training Center for Botanicals and Chronic Diseases in Tajikistan and Indonesia (CBCD) programs to exclude international travel and in person meetings. We have developed a reliable mechanism of online training for graduate and postdoctoral-level scientists that may be combined with in-person training when the pandemic restrictions are lifted. The CBCD provides training across a spectrum of research disciplines from basic biomedical and botanical to clinical and applied sciences, linking traditional uses of botanical therapeutics with the state-of-the-art research capabilities of the participating US institutions. Four training cores composed of 12 asynchronous online courses and 3 supplementary training modules are currently available through the Rutgers University Canvas LMS. A combination of synchronous and asynchronous online activities that includes Rutgers graduate students and postdoctoral fellows provides trainees with flexible remote access to training materials. Courses have modular structure. A module consists of 10-15 minutes of recorded lecture/method's video/information material accompanied by the relevant assessment tools. In addition, US-based peer-researchers provide trainees with personalized consulting in research methods, statistics, PowerPoint presentations, manuscript preparation and writing. Colloquia on Rutgers university library resources and search engines were focused on effective literature search strategies. Two Plants For Human Health International Symposia focused on sharing scientific results of trainees were organized via ZOOM in 2021 and 2022. All meetings were recorded and made available online. Since 2020 CBCD participants published 15 peer-reviewed papers and delivered 47 presentations at national and international scientific meetings. As of June 30, 2022, twenty-one trainees enrolled in the CBCD programs, twenty-four completed training and additional four trainees will be enrolled in the next two years. The CBCD graduates proceed to develop successful research, teaching and research administration careers. Three previously graduated Tajik trainees became prominent scientific leaders in research institutions.

Annette L. Fitzpatrick, Ph.D., The Cardiometabolic Research Training Program: Building Capacity to Address the Burden of Cardiovascular Disease in Nepal and Kenya

Grant associated with D43TW011596, Annette Fitzpatrick, \$1,643,127 for 5 years. Role: Co-PI .Building Capacity to Address the Burden of Cardiometabolic Risk Factors and Diseases in LMICs

Country of focus: Nepal and Kenya

Abstract:

Cardiometabolic risk factors include a combination of metabolic dysfunctions primarily characterized by hypertension, insulin resistance, impaired glucose tolerance, dyslipidemia, and central adiposity. These conditions, escalating at dramatic rates in low- and middle-income

countries (LMICs), increase the risk of and promote onset of cardiovascular diseases (CVDs) leading to mortality and disability. This crisis has led to a call for strategic investment in research including regional development, networking across countries, and expanding cross-sectoral partnerships to improve translation, innovation, and patient care. In this collaboration with Kathmandu University and the University of Nairobi, the Cardiometabolic Research Training (CMRTP) program aims to increase high-impact research on cardiometabolic disease and risk factors by building research capacity in Nepal and Kenya via PhD and Master's level degree training at the University of Washington (UW). The program also promotes mid- and short-term training in Kenya and Nepal focusing on essential research and leadership skills. During this first year of the CMRTP, two students from Nepal have completed their coursework for their MPH degrees at UW and are returning to their home institution to implement their research projects. The program has also supported internship opportunities to the first class of MsPH students at Kathmandu University and facilitated 1-year online coursework in both Nepal and Kenya resulting in advanced certificates for trainees. We have recruited and accepted 2 PhD and 3 MPH candidates to begin studies at UW for the coming academic year. Current students' thesis projects are addressing nutritional transitions and urban/rural disparities in cardiometabolic disease.

Oscar Flores-Flores, M.D., M.Sc, A community intervention to promote evidence-based mental health care for older adults with depressive and anxiety symptoms

Grant associated with: 5K43TW011586, PI: Oscar Flores Flores, K43 Emerging Leader Award; 5D43TW011502, PI: William Checkley.

Country of focus: Lima, Peru

Abstract:

Depression and anxiety symptoms are highly prevalent in older adults, and often present together. Evidence-based care exists to reduce depression and anxiety symptoms in older age. Low intensity psychological approaches such as problem-solving therapy (PST) have been shown to be effective and have been recommended by the World Health Organization (WHO). However, there are myriad barriers to accessing mental health care in older adults. Thus, interventions that systematically and effectively target those barriers are urgently needed. The research proposal seeks to adapt, test, and refine a multi-faceted intervention strategy to deliver mental health care to older adults in low resource settings in Lima, Peru. The goal is to determine whether delivering mental health care via community health workers will have high uptake and will improve symptoms of depression and anxiety in older adults. Additionally, due to the high prevalence of physical multimorbidity in older adults, strategies to address multimorbidity will be tested and potentially incorporated.

Main Recent Publications:

Flores-Flores O, Zevallos-Morales A, Carrión I, Pauer D, Rey L, Checkley W, Hurst JR, Siddharthan T, Parodi JF, Gallo JJ, Pollard SL. "We can't carry the weight of the whole world": illness experiences among Peruvian older adults with symptoms of depression and anxiety. *Int J Ment Health Syst.* 2020 Jul 10;14:49. doi: 10.1186/s13033-020-00381-8.

Siddharthan T, Pollard SL, Quaderi SA, Rykiel NA, Wosu AC, Alupo P, Barber JA, Cárdenas MK, Chandyo RK, Flores-Flores O, Kirenga B, Miranda JJ, Mohan S, Ricciardi F, Sharma AK, Das SK, Shrestha L, Soares MO, Checkley W, Hurst JR; GECO Study Investigators. Discriminative Accuracy of Chronic Obstructive Pulmonary Disease Screening Instruments in 3 Low- and Middle-Income Country Settings. *JAMA.* 2022 Jan 11;327(2):151-160. doi: 10.1001/jama.2021.23065.

Dr Rogers Kajabwangu, Cervical cancer and metabolic syndrome at Mbarara regional referral hospital, Uganda

Grant associated with: 1D43TW011632-01, Francis Bajunirwe, Multi-morbidity in Uganda Research Capacity Initiative (MURCI) at Mbarara University of Science and Technology

Country of focus: Uganda

Abstract:

Cervical cancer has a high mortality especially in Sub-Saharan Africa. In 2018, about 311,000 deaths were attributed to cervical cancer globally, with most of these occurring in Sub-Saharan Africa. The association between metabolic syndrome or its individual components and cervical cancer has been documented in studies carried out in high income countries. This association has not been investigated in low- and middle-income countries where most of the mortality from cervical cancer occurs. This is important because data from sub-Saharan Africa show that incidence of metabolic syndrome is on the increase. Second, since metabolic syndrome seems to worsen the prognosis in cervical cancer patients, it may also be important to study whether this effect is independently related to the histological type of the cancer and whether this is related to metabolic syndrome or an effect of a synergistic interaction between the two factors. Currently, at Mbarara Regional Referral Hospital and indeed many resource-limited settings, cervical cancer patients are not assessed for metabolic syndrome or any other co-existing morbidity. Most of them present in the late stages of the disease and are not screened for common morbidities like diabetes and hypertension or their risk factors. This study will determine the association between metabolic syndrome and cervical cancer, whether metabolic syndrome is associated with the histology and stage at presentation of the cancer and the clinical outcome at one year in cervical cancer patients. This information will strengthen the rationale for integrating metabolic syndrome screening programs in those for cervical cancer screening. The results could also inform future experimental studies to determine whether instituting lifestyle and pharmacological strategies to prevent and treat metabolic syndrome among patients with cervical cancer, improves their prognosis.

PhuongThao D. Le, Ph.D., M.P.H., Enhancing Mental Health Care for Cancer Patients in Low- and Middle-Income Countries: Adaptation of a Stress Management Intervention among Breast Cancer Patients in Viet Nam

Grant: K01TW012174, PhuongThao Le, Adaptation and Pilot of a Peer-Facilitated Self-Help Plus Stress Management Intervention for Breast Cancer Patients in Viet Nam

Country of focus: Vietnam

Abstract:

Breast cancer is the most prevalent type of cancer in women globally and the majority of breast cancer deaths occur low- and middle-income countries (LMICs). Initiatives to implement evidence-based cancer prevention and treatment guidelines, including for breast cancer, in low-resource settings has been gathering pace. A glaring gap, however, are efforts to address the mental health burden associated with cancer. About 1 in 3 cancer patients have psychiatric disorders during their cancer trajectory, and about another 1 in 5 experience clinically significant psychosocial disorders. Psychosocial interventions can reduce cancer patients' distress, which can improve their uptake of and adherence to treatment and consequently their health outcomes.

The aim of this K01 proposal is to adapt Self-Help Plus (SH+)—a World Health Organization (WHO) stress management program to reduce psychological distress in people affected by adversity—for use among breast cancer patients in Viet Nam. The study begins to fill gaps in quality cancer supportive care in LMICs. The use of the evidence-based, culturally adaptable SH+ intervention can transform the delivery of psychosocial care in low-resource environments and in underserved cultural groups worldwide. The study will contribute knowledge to the use of implementation science in LMIC contexts, and in global cancer research.

Main recent publications:

Le PT, Taylor C, Cabanes A, Tran HT. Culture matters: adapting supportive programs for cancer patients in low- and middle-income countries. *Support Care Cancer*. 2022 Jan;30(1):9-12. doi: 10.1007/s00520-021-06479-0. Epub 2021 Aug 8. PMID: 34365524; PMCID: PMC8639653.

Le PT, Eschliman EL, Grivel M, Tang J, Cho YG, Yang X, Tay C, Li T, Bass J, ** Yang LH. ** Barriers and facilitators to implementation of task-sharing mental health interventions in low- and middle-income countries: A systematic review using implementation science frameworks. *Implementation Sci* 17, 4 (2022). doi: 10.1186/s13012-021-01179-z

Chu Q, Cheong IH, Le PT, Yang LH, Wang H, Hall BJ. The unaddressed mental health burden among cancer patients in China: a call to action. *Lancet Psychiatry*. 2021 Aug;8(8):646-647. doi: 10.1016/S2215-0366(21)00180-2. PMID: 34303401.

Pratt-Chapman ML, Silber R, Tang J, Le PT. Implementation factors for patient navigation program success: a qualitative study. *Implement Sci Commun*. 2021 Dec 20;2(1):141. doi: 10.1186/s43058-021-00248-0. PMID: 34930503; PMCID: PMC8685795.

Matthew Magee, Ph.D., MPH, Non-communicable disease profiles among tuberculosis survivors: Preliminary findings from the Pulmonary Impairment after TB Treatment (PITT) study

Grant:5R21TW011157-02, Kipiani/Magee (MPI)Pulmonary impairment after tuberculosis in Georgia: Enhancing clinical research capacity to address the intersection of non-communicable diseases and tuberculosis

Country of focus: Georgia

Personal website: <https://sph.emory.edu/faculty/profile/index.php?FID=matthew-magee-5238>

Abstract:

Tuberculosis (TB) accounts for more deaths due to infectious disease than any other pathogen worldwide other than COVID-19, with an estimated 10 million incident TB cases and 1.5 million TB-attributable deaths each year. Although antimicrobial treatment for TB is highly effective, it is increasingly recognized that there are long-term host consequences for TB survivors considered bacteriologically cured. Multiple sequelae of TB are key precursors to non-communicable diseases (NCDs). This presentation will characterize the NCD burden and trajectory among TB survivors in the PITT study, a longitudinal cohort that followed n=124 TB patients for 12 months following successful TB treatment at the National Center for TB and Lung Diseases in Tbilisi, Georgia. The primary study exposures were TB drug susceptibility status and presence of pulmonary cavitory lesions at the time of TB treatment completion. Pulmonary cavities and inflammation were measured by computed tomography (CT) and positron emission tomography (PET CT). Primary study outcomes included measures of cardiometabolic health (glycated hemoglobin, visceral adiposity index), pulmonary function (spirometry and body plethysmography), quality of life (St. George's Respiratory Questionnaire and Short Form-20 Health Survey), and plasma biomarkers of lung collagen destruction (cytokines and matrix

metalloproteinases [MMPs]). Preliminary PITT study findings suggest on-going inflammation and increased NCD risk among TB survivors with pulmonary cavitary lesions at the time of TB treatment completion.

Recent publications:

Salindri AD, Kipiani M, Avaliani T, Goginashvili L, Vashakidze S, Avaliani Z, Auld SC, Kornfeld H, Kempker RR, Magee MJ. The association between BMI change and glycated hemoglobin level after successful tuberculosis treatment. Society for Epidemiologic Research Conference, 14-17 June 2022, Chicago

Daniel Mendoza-Quispe, M.D., M.Sc.(c), Patient Reported Outcome Measures (PROMs) of treatment burden in multimorbidity: scoping review and recommendations

Grant associated with: GRANT 12985303, J Jaime Miranda, “Using Burden of Treatment as a Clinical Indicator of Barriers to Multimorbidity Management in Peru: A Mixed Methods Approach”

Country of focus: Peru

Lab website: <https://cronicas-upch.pe/>

Daniel Mendoza-Quispe^{1,*}, Silvana Perez-Leon¹, Christopher A. Alarcon-Ruiz², Andrea Gaspar³, Sofia Cuba-Fuentes⁴, Joseph R Zunt⁵, Victor M Montori⁶, M Amalia Pesantes¹, Juan Carlos Bazo-Alvarez^{7,8}, J Jaime Miranda^{1,4,9}

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Abstract

Background: Several Patient-Reported Outcome Measures (PROMs) have recently been developed and applied to assess the treatment burden in patients with multimorbidity, yet few studies have systematically examined the adequacy of these tools. We aimed to assess the evidence on the measurement properties of multimorbidity treatment burden PROMs to inform the potential suitability of applying these tools in diverse settings.

Methods: A scoping review of multimorbidity treatment burden PROMs was conducted in MEDLINE via PubMed (May 2021). Independent reviewers extracted data on (i) characteristics of included studies, their study populations and summary PROMs' scores, and (ii) PROMs' measurement properties evidence (e.g., validity and reliability) and its quality using the COnsensus-based Standards for the selection of health Measurement INSTRUMENTS (COSMIN).

Results: Eight PROMs were identified from 72 studies. Most studies were performed in English (67.6%), in high-income countries (90%), in primary care settings (45.7%), and omitted urban-rural specifications (90%). PROMs were often self-administered (67.2%) either remotely (41.2%)

or in-person (42.6%). Two PROMs (MTBQ and MRB-QoL) had both sufficient content validity and internal consistency. Only one PROM (NHATS) was not validated. Common issues of PROMs included uncertainty of some properties (e.g., responsiveness), absent recall time, floor effects, high scores variability, and unclear rationale for categorizing and interpreting raw scores. Conclusions: This scoping review summarizes the up-to-date progress, potential issues, and gaps during the development, validation, and application of eight multimorbidity treatment burden PROMs, as well as describes their features, measurement properties and quality of evidence for informing future multimorbidity treatment burden PROMs' implementation. Keywords: Chronic disease, Multimorbidity, Cost of illness, Surveys and questionnaires, Patient-Reported Outcome Measures, Scoping review.

Atara Ntekim, Characteristics of cancer clinical trials in Nigeria

Abstract:

Clinical trials provide the gold standard evidence for evaluating treatments and for new drug approvals. However, cancer clinical trials are very low in LMICs such as sub-Saharan Africa (SSA) which includes Nigeria. Less than 2% of global cancer clinical trials happen in SSA. There is growing concern on how to improve the inclusion of this population in clinical trials. The aim of this K43 award was for mentorship towards the emergence of an independent investigator in cancer clinical trials in Nigeria. The research project is a phase II clinical trial which is being conducted in Nigeria. We hereby document the observed characteristics of clinical trials so far as follows: Most participants are treatment naïve with locally advanced diseases. These should be noted during trial designs. Accrual is rapid as there are no/few competing trials. Biomarker stratified trials are contemporary and should be incorporated into protocol development to accelerate precision oncology practice in Nigeria. Participants need more financial support more than what is usually allocated. Most lack health insurance and other treatment supports. Therefore, they rely on the trial for routine medications and even transportation and communication needs. The provision of psycho-oncological and patient navigation services in addition to adequate (individualized) financial support resulted in 95% adherence to clinic visits. Most trials are investigator initiated and fundings are capitated. There are low incentives for local investigators/trial team members for the arduous work needed in clinical trials. Biotech/pharma-initiated trials /supports are needed to improve investigator remuneration and hence enthusiasm. Further collaborations in the expansion and development of research focused infrastructure are needed. To this end, the establishment of purposely built clinical trial units is advocated as most of the existing centers were established primarily for clinical services. My experience during the period of K43 funding provides a foundation for future R21/R01 to expand translational research in Nigeria.

Emmy Okello, Reducing the Impact of Rheumatic Heart Disease across the Life Span: The Impact Program

Grant associated: 1D43TW012255-01, Nelson Sewankambo, Reducing the Impact of Rheumatic Heart Disease across the Life Span: The Impact Program.

Country in focus: Uganda

Emmy Okello MD PhD¹, Andrea Beaton MD³, James Kayima MD PhD², Consolata Kabonesa PhD², Craig Sable MD⁴, Nelson Sewankambo MD².

- The Uganda Heart Institute
- Makerere University
- Cincinnati Children's Hospital Medical Centre
- Children's National Health System, DC

Abstract:

Background: The *Impact* program is designed to equip and nurture emerging research leaders in Uganda to generate high-quality contemporary evidence on RHD across the lifespan.

RHD affects over 40 million people, causing over 345,000 deaths and 10.5 million disability life years lost each year. RHD has become uncommon in high-income countries over the past several decades, but there has been no detectable decline in RHD in low-and-middle-income countries, especially in sub-Saharan Africa.

Extensive echocardiographic-based screening of over 100,000 children and adults in Uganda has revealed a critical diagnostic gap. Approximately 3% of the population is affected by RHD, of which <1% is aware of their disease or linked to care.

Over a decade, the Uganda Heart Institute (UHI), in partnership with Makerere University College of Health Sciences, Cincinnati Children's Hospital, and Children's National Hospital, has focused on research to reduce the national and global burden of RHD.

Objectives: Our overarching objective is to equip and nurture emerging research leaders in Uganda to generate high-quality contemporary evidence on RHD across the lifespan. We will facilitate a bold, but achievable overarching goal: the establishment of a sustainable RHD clinical trials unit on the African continent run by African investigators that will rapidly advance progress towards the elimination of RHD in a generation. Additionally, the *Impact* Program will prioritize closing the "double gender gap" in RHD research, recruiting women as priority trainees and training all *Impact* participants to increase skills for the inclusion of sex and gender analysis in RHD research.

Methods: The *Impact* Program includes long- medium- and short-term training opportunities targeting trainees or individuals with permanent positions at UHI and/or Makerere University or Affiliated Regional Centers conducting RHD research and research training. There are four training tracks (Ph.D., Masters, long-term one-year fellowship, and short-term training).

Oluwakemi Odukoya, MBBS, MPH, MScPH, Barriers And Facilitators Of Fruit And Vegetable Consumption Among Nigerian Adults In A Faith-Based Setting: A Pre-Intervention Qualitative Inquiry

Grant associated with k43TW010704, Oluwakemi Odukoya, Promoting Physical Activity And Healthy Eating Among Adults In A Faith Based Setting In Lagos, Nigeria

Country of focus: Nigeria

Abstract:

Background: inadequate consumption of fruit and vegetable is a risk factor for morbidity and mortality associated with non-communicable diseases (NCDs). An understanding of the barriers and facilitators to consumption is important for effectiveness of intervention in Africa. We present insights among church members before developing a church-based multi-component intervention to address the inadequate consumption of fruit and vegetable.

Methods: we conducted eighteen focus group discussions among 163 church members. All discussions were audio-taped, transcribed verbatim, and were analyzed for thematic content.

Results: we identified five main themes; personal: awareness and knowledge of benefits, choice, habits, and curiosity, dietary restrictions and gastrointestinal symptoms following fruit and

vegetable consumption. Familial: practices promoting the ready availability of fruit and vegetables in the home or habits that encourage children to eat vegetables as they transition into adulthood, pre-existing health problems of family members and the long preparation time of some traditional vegetables. Socio-cultural: cultural practices that encourage F&V consumption, the high cost of fruits and vegetables, alternatives foregone, and cultural taboos. Environmental: inadequate farmland and storage facilities, seasonality of several fruit and vegetables, and sharp practices of force-ripening with chemicals. Church-related: inadequate space provided by the church for arable cultivation and lack of knowledge of the benefits among church leaders, church activities that involve serving fruits and vegetables and the biblical support for the consumption of fruits and vegetables. Conclusion: it is essential to leverage practices that promote fruit and vegetable intake and address barriers mentioned by the participants when designing such interventions.

Main recent publications:

- 1.Odukoya OO, Manortey S, Takemoto M, Alder S, Okuyemi KS. Body, Soul and Spirit, an adaptation of two evidence-based interventions to promote physical activity and healthy eating among adults in churches in Lagos Nigeria: a three-arm cluster randomized controlled pilot trial. Pilot and feasibility studies. 2020 dec;6(1):1-5.
- 2.Odukoya OO, Odediran O, Rogers CR, Ogunsola F, Okuyemi KS. Barriers and facilitators of fruit and vegetable consumption among nigerian adults in a faith-based setting: a pre-intervention qualitative inquiry. Asian pacific journal of cancer prevention. 2022 may 1;23(5):1505-11.

Kolapo Oyebola, Ph.D., Prevalence of age-related clonal hematopoiesis in sickle cell disease

Grant associated with: K43TW011926, Kolapo Oyebola, Prevalence and temporal dynamics of clonal mutations associated with the risk of hematological cancer in a cohort of clinically healthy Nigerians.

Country of focus: Nigeria

Personal/Lab websites: <https://www.github.com/cegribh><https://habilisbiotech.com>

Abstract:

Clonal Hematopoiesis of Indeterminate Potential (CHIP) is an age-related risk factor for hematological malignancies. The presence of environmental stressors such as inflammation influences clinical trajectory of clonal cells. Sickle cell disease (SCD) is hallmarked by chronic inflammation and accelerated aging process, with earlier manifestation of end-stage hematological malignancies relative to people without SCD. Here, we investigated CHIP prevalence in a cohort of SCD patients. Four hundred and fifty-three SCD patients aged 18 –76 years were recruited under the Secondary Pulmonary Hypertension in Adults with Sickle Cell Anemia protocol, of which 79 SCD patients were age-matched with non-SCD volunteers. Using TruSight Myeloid Sequencing Panel, peripheral blood was analyzed for acquired somatic mutations at a variant allele frequency (VAF) of 2% or higher in 54 leukemia-associated genes. There was no indication of a higher burden of CHIP variants in SCD than age-matched non-SCD individuals (Wilcoxon, $P = 0.8$). However, SCD individuals aged 50-60 years had almost 2-fold greater odds of acquiring CHIP mutations than age-matched non-SCD subjects (OR =2.16). Our results do not demonstrate increased CHIP acquisition in SCD patients compared to the general population. Considering the sample size limitation of this study, a largescale analysis of CHIP in SCD subjects with known hematological phenotypes, hydroxyurea status and underlying conditions will be required to validate the observations in this report.

Biraj Neupane, MPH-Global Health, Cardiometabolic risk factors among rural and non-rural adults in Nepal

Grant associated with D43TW011596, Annette Fitzpatrick, \$1,643,127 for 5 years. Role: Trainee. Building Capacity to Address the Burden of Cardiometabolic Risk Factors and Diseases in LMICs

Country of focus: Nepal and Kenya

Abstract:

The rising worldwide burden of cardiometabolic disease is becoming a major public health concern. Various studies suggest that we have started to see a reduction in CVD-related death in high and middle-income countries and an emerging increment in low-income countries. These studies suggest that high systolic blood pressure, high low-density lipoprotein cholesterol, smoking, air pollution, a diet poor in whole grains, and a diet low in fruits are the leading risks associated with the majority of the metabolic diseases. The major risk factors for cardiometabolic diseases have not been consistent across different settings. With this study, we want to better identify the major conventional risk factors for cardiometabolic disease in rural and non-rural Nepal. This study is a cross-sectional study nested within an observational cohort, Dhulikhel Heart Study (DHS) for the non-rural population, and a targeted health services program, the Personalized Health Program (PHP) for the rural population. Inclusion criteria for DHS non-rural population are individuals aged 18-55 years residing in Dhulikhel municipality and for PHP rural population will be individuals aged 18-55 years from the periphery of rural health centers will be included for the study and tools will be analyzed. Descriptive statistics on demographics and risk factors will be presented by gender using means/standard deviations for continuous variables and counts/percentages for categorical variables. The adjusted odds ratio for demographic variables will be calculated to show the association of risk factors and BMI, BP, and blood sugar.

Maria Amalia Pesantes MA, MPH, Ph.D., Adapting the concept of Burden of Treatment to Peru

Grant associated with: GRANT12985303, Jaime Miranda, Using Burden of Treatment as a Clinical Indicator of Barriers to Multimorbidity Management in Peru: A Mixed Methods Approach" (GRANT12985303)

Country of focus: Peru

Personal/Lab website: <https://cronicas-upch.pe/>

Abstract:

Multiple studies have shown that patients with multimorbidity suffer from worse clinical outcomes than those with only one condition. Part of this is due to the fact that they experience a higher burden of treatment (BOT), which is defined as how their healthcare workload - or all of the things they must do to comply with their medical treatment - affects their functionality and well-being. In countries like Peru, healthcare systems have evolved to treat acute conditions rather than manage chronic ones and consequently are replete with numerous barriers preventing successful multimorbidity management. In order to improve the clinical outcomes among those with multimorbidity, it is crucial to create patient-centered interventions that minimize these barriers. Sustainable implementation of these changes, however, requires the use of quality indicators, one of which is BOT. Although several patient-reported outcome measures have been identified to measure BOT in clinical settings, their use in LMICs has been limited. Our project goal is to measure BOT in Peru and compare it in patients that receive care

in different settings (private vs public, urban vs semi-urban). In order to achieve these objectives, the project has undertaken a scoping review of the existing Patient Reported Outcome Measures (PROMs) of BOT in multimorbidity with the purpose of identifying the instrument that is most appropriate for its use in Peru. Additionally, the project has concluded semi-structured interviews to have an in depth understanding of BOT in patients with multimorbidity. The result of the scoping review and the semi-structured interviews will allow to adapt a BOT instrument to the context of Peru and measure it in patients with multimorbidity.

Jean Lookens Pierre, MD, Neighborhood Cohesion and Violence in Port-au-Prince, Haiti, and their Relationship to Cardiovascular Risk Factors of Stress, Depression, and Blood Pressure

Grant Associated With: D43 TW011972/TW/FIC NIH HHS/United States. Dr Jean W Pape, Dr Margaret McNairy, "Cardiovascular Disease Research Training Program in Haiti"
R01 HL143788/HL/NHLBI NIH HHS/United States. Dr Margaret McNairy, "A longitudinal cohort study to evaluate cardiovascular risk factors and disease in Haiti"

Country of focus: Haiti

Abstract:

Neighborhood factors have been associated with health outcomes, but this relationship is underexplored in low-income countries like Haiti. We describe perceived neighborhood cohesion and perceived violence using the Neighborhood Collective Efficacy and the City Stress Inventory scores. We hypothesized lower cohesion and higher violence were associated with higher stress, depression, and hypertension. We collected data from a population-based cohort of adults in Port-au-Prince, Haiti between March 2019 to April 2021, including stress (Perceived Stress Scale), depression (PHQ-9), and blood pressure (BP). Hypertension was defined as systolic BP \geq 140 mmHg, diastolic BP \geq 90 mmHg, or on antihypertensive medications. Covariates that were adjusted for included age, sex, body mass index, smoking, alcohol, physical activity, diet, income, and education, multivariable linear and Poisson regressions assessed the relationship between exposures and outcomes. Among 2,799 adults, 59.7% were female and median age was 41 years (IQR:28-55). Participants reported high cohesion (median 15/25, IQR:14-17) and moderate violence (9/20, IQR:7-11). Stress was moderate (8/16) and 12.6% had at least moderate depression (PHQ-9 \geq 11). Median systolic BP was 118 mmHg, median diastolic BP 72 mmHg, and 29.2% had hypertension. In regressions, higher violence was associated with higher prevalence ratios of moderate-to-severe depression (Tertile3 vs Tertile1: PR 1.12, 95%CI:1.09 to 1.16) and stress (+0.3 score, 95%CI:0.01 to 0.6) but not hypertension. Cohesion was associated with lower stress (Tertile3 vs Tertile1: -0.4 score, 95%CI: -0.7 to -0.2) but not depression or hypertension. In summary, urban Haitians reported high perceived cohesion and moderate violence, with higher violence associated with higher stress and depression.

Manuel Ramirez-Zea, Ph.D., M.D., The INCAP-Drexel training program on social determinants of cardiovascular disease risk over the life course

Grant associated with: D43TW011971, MPIs: Brisa N. Sanchez / Ana Diez-Roux, Social determinants of cardiovascular disease risk over the life course

Country of focus: Guatemala, El Salvador, Costa Rica, Panama

Personal/Lab website: <http://www.incap.int/ciipec/index.php/en/quix-en/212-manuel-zea>

Abstract:

Cardiovascular disease (CVD) prevention in Central America requires understanding how social determinants and place-based factors influence CVD risk across the lifespan. It is critical to train and mentor the local workforce in identifying research questions relevant to CVD prevention, in the use of appropriate research methods to answer them, and in the dissemination of results to the scientific community, the public, and policy makers. Our training program develops the research capabilities of trainees from the region and builds local capacity in the conduct of policy-relevant research on social determinants of CVD risk across the lifespan through key program elements: (1) a focus on factors at multiple levels (from cities, to neighborhoods, to persons) and over the life course, (2) the use of rigorous state-of-the-art methods; (3) an emphasis on the value of interdisciplinary approaches; and (4) dissemination and translation of research findings into policy actions. Training activities include (a) training of two PhD students and one Master student; (b) support for up to 4 postdoctoral fellows and 11 visiting faculty fellows promoting the development of junior and mid-career faculty; (c) annual workshops and periodic webinars and journal clubs on social determinants of health, CVD and life course epidemiology, and research methods; (d) support for the development of data management and analytical capacity on site; and (e) enhanced south-south collaborations in mentorship and research. As a result of the program, we expect to see increases in research capacity and collaborations across the region, as assessed by several metrics. This talk will describe the INCAP-Drexel training program, which is built on an established collaboration between INCAP and Drexel University, and describe the progress towards advancing the training goals during year one of the program.

Argita Salindri, Ph.D., MPH, The association between weight gain during tuberculosis treatment and post-tuberculosis metabolic markers

Grant: 5R21TW011157-02, Kipiani/Magee (MPI)

Role: Study Coordinator

Pulmonary impairment after tuberculosis in Georgia: Enhancing clinical research capacity to address the intersection of non-communicable diseases and tuberculosis

Country of focus: Georgia

Authors:

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Division of Pulmonary, Allergy, and Critical Care, Department of Medicine, University of Massachusetts Medical School, MA, USA

Division of Infectious Diseases, Department of Medicine, Emory University School of Medicine, Atlanta, GA, USA

Abstract:

Background: Weight loss is characteristic of tuberculosis (TB) disease, and weight gain during TB treatment is associated with successful outcomes. Yet little is known about weight gain during TB treatment and post-TB metabolic health. We assessed the association between change in body mass index (BMI) during TB treatment and post-TB markers of metabolic health.

Methods: During 2018-2022, we conducted a cohort study of patients successfully treated for TB in the country of Georgia. Eligible participants were HIV-negative adults with newly diagnosed laboratory-confirmed pulmonary TB. The study exposure was relative BMI change between treatment initiation to end of TB treatment (dichotomized using ³5% increase cut-off). Study outcomes were changes in glycated hemoglobin (HbA1c) and visceral adipose index (VAI), both measured at the end of TB treatment and 6-months post-TB treatment. We estimated the association between change in BMI and study outcomes using multilevel linear models.

Results: Among 140 participants enrolled at the end of TB treatment, 119 (85%) had BMI change information available and were included in analyses. Median relative BMI change was +4.3% (interquartile range 0–10%). There were 52 individuals (44%) with ³5% increase of BMI, 65 (55%) had similar BMI, and 2 (2%) had ³5% decrease. Among those with an increase of BMI during TB treatment, the adjusted post-TB change in mean HbA1c was 0.27 (95%CI -0.02, 0.57) percentage points higher than those with no BMI change, accounting for repeated measures. Similarly, among those with an increase of BMI during TB treatment, the adjusted post-TB change in mean VAI was 0.70 (95%CI -0.33, 1.73) points higher than those with no BMI change.

Conclusions: Our findings indicate that weight gain during TB treatment may influence blood glucose levels after TB treatment completion and could be a potential marker of metabolic health post-TB treatment.

Rodney Sufra, M.D., Diabetes Epidemiology Among Adults in Port-au-Prince, Haiti: A Cross-Sectional Study

Grant associated with:

D43 TW011972/TW/FIC NIH HHS/United States. Dr Jean W Pape, Dr Margaret McNairy
R01 HL143788/HL/NHLBI NIH HHS/United States. Dr Margaret McNairy

Country of focus: Haiti

Abstract:

Diabetes mellitus is a chronic non-communicable disease, a major health issue associated with premature mortality and poor quality of life, with increasing prevalence in low- and middle-income countries. There is limited population-based data concerning the epidemiology of diabetes among the adult population in Haiti. We analyzed cross-sectional enrollment data from the population-based Haiti Cardiovascular Disease Cohort Study, conducted using multistage sampling with global positioning system waypoints in census blocks in the metropolitan area of Port-au-Prince, Haiti to assess the prevalence of diabetes and associated factors among 3,005 adults. We collected socio-demographic data, health-related behaviors, and clinical data using standardized questionnaires. Among 2985 (99.3%) with complete diabetes data, median age was 40 years, 58.1% were female, and 17.2% were obese. The prevalence of diabetes was 5.4% crude, and 5.2% age standardized. In unadjusted analysis, older age, higher body mass index (BMI), low physical activity, low education were associated with a higher odds of diabetes. After multivariable logistic regression, older age [60+ vs 18-29, Odds Ratio (OR)17.7, 95% CI 6.6 to 47.9] and higher BMI (obese vs normal/underweight, OR 2.7, 95% CI 1.7 to 4.4) remained statistically significantly associated with higher odds of diabetes. While diabetes prevalence was

found low, there remains an important need to strengthen the Haitian health system to prevent, diagnose, and treat diabetes.

Main recent publications:

Sufra R, Lookens Pierre J, Dade E, Rouzier V, Apollon A, St Preux S, Préval F, Inddy J, Metz M, Tymejczyk O, Nash D, Malebranche R, Deschamps M, Pape JW, Goncalves MD, McNairy ML, Yan LD. Diabetes Epidemiology Among Adults in Port-au-Prince, Haiti: A Cross-Sectional Study. *Front Endocrinol (Lausanne)*. 2022 Feb 24;13:841675. doi: 10.3389/fendo.2022.841675. PMID: 35282460; PMCID: PMC8913034.

Clermont A, Sufra R, Pierre JL, Mourra MN, Fox EL, Rouzier V, Dade E, St-Preux S, Inddy J, Erline H, Obed FP, Yan LD, Metz M, Lee MH, Fitzgerald DW, Deschamps MM, Pape JW, McNairy ML. Dietary Risk Factors for Cardiovascular Disease among Low-Income Haitian Adults: Findings from a Population-Based Cohort. *Nutrients*. 2022 Feb 13;14(4):787. doi: 10.3390/nu14040787. PMID: 35215437; PMCID: PMC8880283.

Yan LD, Dévieux JG, Pierre JL, Dade E, Sufra R, St-Preux S, Tymejczyk O, Nash D, Metz M, Lee MH, Fitzgerald DW, Deschamps M, Pape JW, McNairy M. (2022) The relationship between perceived stress and support with blood pressure in urban Haiti: A cross-sectional analysis. *PLOS Global Public Health* 2(5): e0000263. <https://doi.org/10.1371/journal.pgph.0000263>

Ayad Jaffa, PhD; Leonard Egede, MD, MS, Running a Clinical Study in the middle of a Pandemic and Social Upheaval: A Case Study from Lebanon

Co-Investigators: [Ola Sukkarieh*](#), Ph.D., MPH, RN; [Maya Bassil*](#), PhD; Miran Jaffa, PhD; Rebekah Walker, PhD; Jennifer Campbell, Ph.D., MPH *Presenting authors

Grant associated with: R21 TW011453-01A1, MPI: Ayad Jaffa, PhD; Leonard Egede, MD, MS; “Building Infrastructure to Address Social, Cultural and Biological Determinants of Diabetes in Lebanon”

Country of focus: Lebanon

Abstract:

Lebanon, a country in MENA region, is currently experiencing a drastic sociopolitical upheaval. Receiving an R21 grant that examined the role of a variety of factors on diabetes outcomes was a privilege and a major challenge. This is due to the numerous COVID-related and sociopolitical factors that impeded study progression. Challenges pertinent to the COVID pandemic included extensive lockdown, lack of preparedness of health sector and delay in vaccination. Sociopolitical challenges presented as severe inflation and currency devaluation, road closure, difficulty in recruiting competent research assistants due to brain drain, lack of fuel which impaired purchases and transportation, as well as shortage of supplies for the study. During lockdown, time was optimized by securing IRB approvals, developing training manuals, hiring, and training research assistants, in addition to identifying research sites that have dense and diversified clientele and were convenient in terms of location to save on fuel consumption. Other challenges were overcome by strengthening partnership with administrators of centers for public outreach and partnering with the Ministry of Public Health for maximized access to Primary Health Care Centers. Despite challenges, target recruitment of 500 participants was achieved. These participants were recruited across different clinical centers and from a diverse population by age, socioeconomic status, gender, and religious background. Staff from diverse health professions including public health, nursing, and pharmacy, and leadership across three academic institutions were

extensively engaged. This enhanced the team's ability for capacity building and sets the stage for larger scale studies.

Ola Sukkarieh, Ph.D., MPH, RN and Maya Bassil, Ph.D., MS, Running a Clinical Study in the middle of a Pandemic and Social Upheaval: A Case Study from Lebanon

Grant associated with: 1R21 TW011453-01A1, Leonard Egede (PI-Medical College of Wisconsin), Building Infrastructure to Address Social, Cultural and Biological Determinants of Diabetes in Lebanon

Country of focus: Lebanon, USA

Abstract:

Lebanon, a country in MENA region, is currently experiencing a drastic sociopolitical upheaval. Receiving an R21 grant that examined the role of a variety of factors on diabetes outcomes was a privilege and a major challenge. This is due to the numerous COVID-related and sociopolitical factors that impeded study progression. Challenges pertinent to COVID pandemic included extensive lockdown, lack of preparedness of health sector and delay in vaccination. Sociopolitical challenges presented as substantial impediments such as road closure, recruiting competent research assistants due to brain drain, lack of fuel which impaired purchases and transportation, as well as shortage of supplies for the study. Thinking outside the box was the driving force to make the study happen.

Main recent publications:

Awad, N., Saade, S., Bassil, M., Sukkarieh-Haraty, O., & Egede, L. E. (2022). Relationship between Social Determinants of Health and Clinical Outcomes in Adults with Type 2 Diabetes in Lebanon. *Journal of the National Medical Association*.

Sukkarieh-Haraty, O., Egede, L. E., & Bassil, M. (2022). Relationship between Material Needs Security and Clinical Outcomes in Adults with Type 2 Diabetes in Lebanon. *Diabetes Research and Clinical Practice*.

Carla Tarazona-Meza, LDN, MPH Doctoral Student of International Health, Johns Hopkins Bloomberg School of Public Health, Effects of a household air pollution intervention on dietary and sodium intake of adult women in Puno, Peru

Grant: D43TW011502, William Checkley, D43-funded Fogarty Research training in Chronic, Non-Communicable Respiratory Diseases in Peru (PulmPERU) training grant

Country of focus: Peru

Abstract:

Background: Household air pollution (HAP) is a widespread environmental exposure worldwide. While several cleaner fuel interventions have been implemented to reduce personal exposures to household air pollution, it is unclear if they also affect the choice of meals and dietary intake.

Objective: We aimed to determine the effect of a HAP intervention on dietary and sodium intake. Intervention participants received liquefied petroleum gas (LPG) stove, continuous fuel delivery, and behavioural messaging during one-year whereas control participants continued with usual cooking practices that involved the use of biomass-burning stoves.

Methods: We conducted an individually randomized, open-label controlled trial of a HAP intervention in 180 women aged 25–64 years in rural settings and assessed diet and sodium intake in a subset of 100 women. Dietary outcomes included energy, energy-adjusted

macronutrients, and sodium intake at baseline, six months, and 12 months post-randomization using 24-hour dietary recalls and 24-hour urine. We used t-tests to estimate differences between arms in the post-randomization period.

Results: At baseline, control and intervention participants were similar in age (47.4 vs. 49.5 years) and had similar daily energy (2126 vs. 1983 kcal), carbohydrate (370.8vs.373.3 g) and sodium intake (4.9vs. 4.8 g). One year after randomization, we did not find differences in average energy intake (2221 vs. 2100 kcal;p=0.22) or sodium intake (4.5 vs. 4.6;p=0.79) between control and intervention participants.

Conclusions: Our HAP intervention consisting of an LPG stove, continuous fuel distribution and behavioral messaging for one-year did not affect dietary and sodium intake in rural Peru.

Zaira Bailón, M.D., M.S. (c), Effect of altitude on systolic and diastolic blood pressure variation in adult men from San Marcos, Cajamarca, Peru

Grant associated with: D43 TW011601, De la Fuentes, Lisa, Research Training: Chronic Non-communicable CVDs and Comorbidities in Peru

Country of focus: Peru

Abstract:

Modifiable and non-modifiable factors determine blood pressure (BP). It is estimated that the increase in altitude would be related to the increase in BP. Studies in Nepal and Tibet report an increase of 15.6-17 mmHg in systolic blood pressure and 9.5 mmHg in diastolic blood pressure for every 1,000 meters of altitude elevation. On the other hand, in the Andes, an increase in BP is reported from 750 meters above sea level; however, a systematic review found no significant association between BP and altitude in the Andean population, suggesting that other factors that could influence BP, such as BMI, salt intake, physical activity, age, and not necessarily altitude. Likewise, men have higher levels of SBP and DBP than women from 2890 m.a.s.l. There are 1.96 times (CI: 1.34-2.86, p<0.01) of being hypertensive or consuming antihypertensives compared to women. This study aims to determine the effect of altitude on systolic and diastolic blood pressure variation in adult men from the province of San Marcos, Cajamarca, Peru.

Lisa de las Fuentes, M.D., M.S., Research Training: Chronic Non-communicable CVDs and Comorbidities in Peru

Grant associate with: D43 TW011601, Lisa de las Fuentes, Research Training: Chronic Non-communicable CVDs and Comorbidities in Peru

Country of focus: Peru

Abstract:

Chronic cardiovascular disease (CVD) is the leading cause of morbidity and mortality worldwide and in Peru. In addition to the usual CVD risk factors, social factors such a low socioeconomic status and environmental exposure further contribute to chronic CVD burden. Among non-communicable diseases (NCDs), the high prevalence of hypertension with low rates of awareness, treatment, and control represent an important health care gap that contributes to CVD burden in Peru. This D43 Training Grant represents a collaboration between US investigators (Washington University in St. Louis and Johns Hopkins University in Baltimore) and Peruvian investigators (Universidad Peruana Cayetano Heredia in Lima, Universidad Nacional del Altiplano de Puno, AB PRISMA in Lima and Puno). The D43 training program will leverage

existing research projects and infrastructure in Peru to train Peruvian scientists and health professionals in chronic NCDs/CVD. The objectives of this structured program are to develop the research careers of trainees in the areas of chronic CVD, stroke, implementation science, and environmental exposure; to provide mentoring and support by an internationally renowned faculty with multidisciplinary expertise; and to provide opportunities for career advancement and engagement in research projects. The program will provide intensive training opportunities and build capacity in a range of scientific disciplines and skills relevant to achieving research independence. The long-term goal of this program is to build a sustainable and collaborative research-training infrastructure to develop Peruvian research scientists capable of designing and executing interventions addressing unmet healthcare needs, including the translation of evidence-based interventions and the implementation and dissemination of effective policies to improve public health in Peru.

Beth Feingold Ph.D., MEd, MPH, Application of novel biomarkers to measure health impacts of anthropogenic change in the Amazon

Grant associated with 1K01TW011478-01A1, Beth Feingold -PI , Application of novel biomarkers to measure health impacts of anthropogenic change in the Amazon

Country of focus: Peru

Personal/Lab website: <https://www.albany.edu/sph/faculty/beth-j-feingold>

Abstract:

Though largely preventable, cardiometabolic diseases have remained the leading cause death worldwide for over 15 years. Low and Middle Income Countries (LMIC) shoulder a rapidly rising share of the global burden. Though often overlooked, rural, remote LMIC regions, such as the Amazon rainforest, are of particular interest as they are undergoing significant anthropogenic changes (i.e. resource extraction, infrastructure development, and rapid urbanization) and as a result, have increasing availability of, and access to, the Western Diet. Addressing diet-related health risks associated with the nutritional transition in rural LMIC regions is crucial but has been limited by the lack of quantitative biomarkers to measure dietary intake. Two promising non-invasive biomarkers for this application are carbon and nitrogen stable isotope ratios (CIR and NIR). The CIR is elevated in key components (corn, sugar cane) of the Western, but not the traditional Amazonian (cassava, potatoes) diet. In contrast, the NIR is elevated in fish, a key traditional protein, but is not in animal-based foods characteristic of Westernization (e.g. farmed chicken, beef). Thus, CIR and NIR, which are potentially more sensitive and less biased than diet surveys, can provide objective enculturation proxies. My central hypothesis is that as dietary intake biomarkers of the nutrition transition, CIR and NIR are associated with the cardiometabolic risks related to urbanization and infrastructure development. Recent work suggests that that CIR and NIR reflect changing dietary patterns in the Amazon. Though work in other geographic areas suggests CIR and NIR association with cardiometabolic risk factors (i.e. hbA1C, blood pressure, cholesterol), it remains unknown if CIR and NIR are associated with cardiometabolic risk biomarkers in nutritionally transitioning LMIC populations. My research leverages previously collected diet pattern data and hair samples and will re-visit previously enrolled study participants to ascertain how changing dietary profiles effect cardiometabolic disease risk in the Southern Peruvian Amazon region of Madre de Dios.

Lord Jephthah Joojo Gowans, Ph.D, Elucidating Cleft Etiology Employing Multiplex and Twin Families (EICEEMuTF)

Grant associated with: K43DE029427, Lord Jephthah Joojo Gowans

Country of focus: Ghana

Personal/Lab website:

<https://webapps.knust.edu.gh/staff/dirsearch/profile/summary/c6e95924e672.html>

Abstract:

Orofacial clefts (OFCs) are the most common craniofacial malformation that emanates from the perturbation of the carefully regulated molecular and cellular processes that coordinate the development of the craniofacial complex. OFCs have an incidence of 1 per 700 live births with a significant ethnic variation. The condition may be syndromic or nonsyndromic, with cleft palate only (CP) sub-phenotype having a 50% chance of being syndromic whereas cleft lip (CL) and cleft lip and palate (CLP) sub-phenotypes have about a 30% chance of being syndromic. The current study sought to carry out genetic etiologic studies employing families with twins discordant for twins and multiplex families. In all, 25 families with twins discordant for clefts have been recruited. Of these twin families, 13 were families with same-sex twins whereas 12 were families with opposite-sex twins; all the twins were discordant for OFCs. Out of the 13 same-sex twins, 8 were females whereas 5 were males. Of the 12 opposite-sex twins, 6 of the probands were males whereas the 6 probands were females. It was intriguingly observed that no two twins from the same family were ever affected by OFCs, though these twins shared the same intrauterine environment during gestation and have the same parents, suggesting a minimal role of environmental factors on the etiology of OFCs in these families. Moreover, a total of 15 multiplex families have been recruited. Of these 15 multiplex families, OFC was observed in: (a) proband and a sibling in 3 families, (b) proband, a sibling, and mother in 3 families, (c) proband and mother in 5 families, and (d) proband and father in 4 families. Clinical, environmental, and phenomics data, as well as saliva/cheek swab samples, have been collected from these participants. DNA samples are currently undergoing sequencing to ascertain genetic variants predisposing these families to OFCs.

Main recent publications:

Awotoye W, Mossey PA, Hetmanski JB, Gowans LJJ, Eshete MA, Adeyemo WL, et al. (2022). Whole-genome Sequencing reveals de-novo mutations associated with Nonsyndromic Cleft Lip/Palate. *Scientific Reports*; <https://doi.org/10.21203/rs.3.rs-1064924/v1>. Accepted on April 22, 2022.

Awotoye W, Comnick C, Pendleton C, Zeng E, Alade A, Mossey PA, Gowans LJJ, et al. (2021). Genome-wide GxSex Interaction Studies Identify Novel nsOFCs Risk Locus. *J. Dent. Res.*; 101(4):465-472. DOI.org/10.1177/00220345211046614.

Naicker T, Adeleke C, Alade AA, Mossey PA, Awotoye WO, Busch TD, Gowans LJJ, Li M, Olotu J, Aldous C, Butali A. (2021). Novel GRHL3 variants in a South African cohort with cleft lip and palate. *The Cleft-Palate Craniofac. J.*; DOI: 10.1177/10556656211038453. Epub ahead of print.

Lord Jephthah Joojo Gowans, Ph.D., Molecular Genetic Etiology of Craniosynostosis among Ghanaians (MoGECaG)

Grant associated with: R21TW011729, Lord Jephthah Joojo Gowans, Michael L. Cunningham and Solomon Obiri-Yeboah,

Country of focus: Ghana

Personal/Lab website:

<https://webapps.knust.edu.gh/staff/dirsearch/profile/summary/c6e95924e672.html> Talk or poster title: Craniosynostosis among Ghanaians: do affected individuals thrive to adulthood?

Abstract:

Craniosynostosis is the second most common craniofacial birth defect, affecting 1 in 2000 to 2,500 live births. It emanates from the premature fusion of one or more cranial sutures which may culminate in the restriction of the growth of the developing brain. The condition has multifactorial etiology and appears as familial in just about 10% of cases. About 15% of cases are syndromic, with the majority of cases (85%) presenting with no other abnormalities except craniosynostosis. The present study sought to ascertain the genetic etiology of craniosynostosis among Ghanaians and to ascertain whether affected individuals thrive to adulthood. Out of the about 30 cases of craniosynostosis (most of which were syndromic) in the records of the Cleft-Craniofacial Clinic at KATH at the start of this research, only 3 cases (10%) were successfully contacted and recruited into this study. Two observations accounted for this: (a) death or abandonment of some patients, and (b) inability to trace affected families due to poor address system or telecommunications connectivity. Importantly, there were no records of surgical repairs on most of these affected individuals. These notwithstanding, the current study has recruited 14 case pedigrees and collected 37 saliva/cheek swab samples from affected families. The samples are currently being processed for whole-genome sequencing. All 14 case pedigrees are non-familial simplex, with 13 cases (92%) being syndromic. Thus, syndromic cases were more likely to be reported to the clinic than nonsyndromic forms of craniosynostosis. Observations made in this study suggest that nonsyndromic cases of craniosynostosis are less likely to be reported in Ghana, and the survival rate of reported syndromic cases is low, probably due to high prenatal mortality characteristics of the syndromes, probably infanticide, and other factors. The impending DNA sequencing studies are needed to confirm the various syndromes underlying the reported cases.

Luz Claudio, Training Latin American Scientists in Environmental Medicine and Public Health

Grant: D43TW011403 International Training in Environmental Health over the Lifespan: A collaboration between National University of Costa Rica and Icahn School of Medicine at Mount Sinai, New York

Country of focus: Costa Rica & USA

Personal/Lab website: www.drluzclaudio.com

Abstract:

Global environmental health is the most pressing challenge of our time. The Lancet estimated that environmental pollution causes three times more deaths from non-communicable diseases (NCD) than AIDS, tuberculosis, and malaria combined and that 92% of pollution-related deaths and diseases occur in LMICs.

The mission of the Mount Sinai Division of International Health is to collaborate with LMICs to identify, document, prevent and mitigate environmental health problems especially in vulnerable populations. This program builds on previous work to employ a proven, multi-tiered research training strategy that focuses on local strengths at the individual, institutional, and regional levels with public university partners in Costa Rica, a country of many environmental strengths and challenges.

This project was funded in August 2020, when the COVID pandemic and subsequent shutdowns were gripping the world. Thus, it was necessary to pivot the training to a virtual format. The Virtual School has offered 10 different courses, including Introduction to Biostatistics, CBPR, and Public Health in Megacities. It has served 132 participants from 19 Latin American countries with courses offered in Spanish of 4-12 weeks in duration meeting live twice per week. The program has also selected and supported 8 research fellows and one advanced fellow who are conducting research projects in Costa Rica and are poised to receive research training from mentors in New York now that travel is starting to resume.

Although the pandemic has affected the pace of research training that fellows in the program are receiving, other aspects of the program have flourished. The Virtual School has created not only a training opportunity for our partners in Latin America, but also an important networking platform for Latin American professionals in the areas of environmental medicine and public health research.

Jonah Musa, MBBS, MSCI, Ph.D., Vaginal Microbiome in Cervical Intraepithelial Neoplasia and Cancer

Grant associated with 5K43TW011416-4, Jonah Musa-PI , Vaginal Microbiome in Cervical Intraepithelial Neoplasia and Cancer

Country of focus: Nigeria

Abstract:

Invasive cervical cancer (ICC) has a well-known natural history with precancerous conditions that are detectable and treatable through cervical cancer screening (CCS). Yet, ICC ranks as the second most common cancer affecting women across all low- and middle-income countries, who collectively have 98% of the world's cervical cancer deaths. ICC is entirely attributable to a sexually transmissible viral infection, the high-risk human papillomavirus (HR-HPV), and women who are living with HIV are at least six-times more at risk of developing cervical cancer compared to women who are HIV negative. This career development project seeks to understand the microbiome community state types associated with clearance or persistence of HR-HPV leading to cervical carcinogenesis. This is significant since vaginal microbiome (VMB) could be modified through lifestyle and findings could be translated to therapeutic intervention at the population level. In our preliminary analysis of the cross-sectional aim of the project, we

compared the VMB among women with negative intraepithelial lesion or malignancy (NILM, N=15) or ICC (N=27). The women were median age 45 years (NILM) and 50 years (ICC), with a much higher prevalence of HIV infection among women with ICC (63%) than NILM (27%). HR-HPV prevalence was similar in both groups (60% NILM, 63% ICC). Notably, the mean relative abundance (RA) of *Lactobacillus* is higher among women with NILM and is depleted in women with ICC. At the same time diverse, non-optimal taxa are enriched in the VMB of women with ICC. In multivariate Dirichlet linear regression adjusted for age, HIV status, and HPV status *Lactobacillus* relative abundance was inversely associated with ICC while the RA of diverse, non-optimal taxa was positively associated with ICC. Our next step is to analyze the longitudinal changes in a cohort of HIV women with low-grade dysplasia to understand the VMB markers, cytokines, HR-HPV and related factors associated with progression to high grades dysplasia and or ICC. This project is supported by NIH/FIC (5K43TW011416-4) with co-mentors from University of Jos, Northwestern University, UIC and RUSH University, Chicago, USA.

Yoshan Moodley, Ph.D., Evaluating elements of self-adherence to post-colonoscopy clinic visits - Preliminary data from a South African quaternary hospital

Grant associated with: K43CA268978-01, Yoshan Moodley, A clinical prediction rule for identifying South African colorectal cancer patients who will fail to engage in oncology care

Country of focus: South Africa

Abstract:

Post-colonoscopy clinic visits are opportunities for sharing information around a diagnosis of colorectal cancer and possible management strategies with a patient, thereby improving the patient's decision-making processes related to their cancer care. We sought to evaluate cognitive, motivational, social, and behavioural variables impacting self-adherence to post-colonoscopy clinic visits at a South African quaternary hospital. We surveyed 47 consecutive patients with suspected colorectal cancer who attended the Inkosi Albert Luthuli Central Hospital for colonoscopy from 1 March 2022-30 April 2022 with the Adherence Determinants Questionnaire (ADQ). The ADQ consists of seven elements previously found to be associated with self-adherence to cancer treatment – interpersonal aspects of care, perceived utility, perceived severity, perceived susceptibility, subjective norms, intentions, and supports/barriers. We recoded patient responses for each element on a Likert Scale and transformed this into a percentage of the maximum obtainable score for that element (Transformed ADQ). Mean untransformed and transformed ADQ scores with standard deviation (SD) were computed for the study sample and compared across categories of age, gender, and race. We considered higher untransformed or transformed ADQ scores indicative of improved self-adherence. The mean age of our study sample was 48.9 (SD 17.8) years, 44.7% were male, and 55.3% were Black South Africans. The overall mean untransformed ADQ score was 103.0 (SD 7.9) and mean untransformed scores for the seven elements ranged from 7.3 (Subjective norms) to 24.9 (Interpersonal aspects). The overall mean transformed ADQ was 57.8% (SD 4.5%) and mean transformed ADQ scores for the seven elements ranged from 40.8% (Subjective norms) to 65.9% (Perceived susceptibility). Mean untransformed and transformed ADQ scores (overall and for each element) were similar across categories of age, gender, and race. In conclusion, improvement in all elements of self-adherence to post-colonoscopy clinic visits is required in our setting, irrespective of patient age, gender, or race.

Main recent publications:

Madiba T, Moodley Y, Sartorius B, Sartorius K, Aldous C, Naidoo M, Govindasamy V, Bhadree S, Stopforth L, Ning Y, Kiran PR. Clinicopathological spectrum of colorectal cancer among the population of the KwaZulu-Natal Province in South Africa. *Pan Afr Med J.* 2020 Sep 18;37:74. doi: 10.11604/pamj.2020.37.74.21313. PMID: 33244337; PMCID: PMC7680225.

Moodley Y, Madiba T. Out-patient visits for gastrointestinal cancer at a quaternary South African hospital-trends and geospatial distribution. *Afr Health Sci.* 2020 Mar;20(1):359-367. doi: 10.4314/ahs.v20i1.41. PMID: 33402923; PMCID: PMC7750041.

Samantha Winter, Ph.D, Critical questions: A dialogue about global health research and intervention in the early stages of adapting a low-cost intimate partner violence (IPV) and mental health response intervention for women in informal settlements in Kenya

Grant associated with: 1K01TW011775-01A1, Samantha Winter, Adapting a low-cost intimate partner violence (IPV) and mental health response intervention for women in informal settlements in Kenya

Country of focus: Kenya

Abstract:

Globally, 30% of women have experienced intimate partner violence (IPV). Prevention and response to IPV is critical; yet few interventions have been adapted for residents of informal settlements. Currently, 56% of the 3 million residents in Nairobi, the capital city of Kenya, live in informal settlements, and this population is likely to double by 2050. Research carried out in 2012 in Kibera, the largest informal settlement in Nairobi, reported that 85% of women have experienced IPV in their lifetime and a 2018 study reported that 66% of women in similar Nairobi settlements experienced IPV in the past year. Women experiencing IPV are more likely to also experience depression, anxiety, and post-traumatic stress. In 2014, Kenya identified reduction of and response to violence against women (VAW) as a priority health area in national policies and strategic plans; yet, screening of and response protocols for IPV survivors are limited in clinics in informal settlements. The aims of the study are to identify potential facilitators and barriers to interventions for IPV and related mental health challenges in healthcare settings in informal settlements in Kenya and adapt and pilot test a combined IPV and mental health intervention in a health clinic in a large informal settlement in Nairobi. The purpose of this talk will be to discuss and ask critical questions about the plans for this project and the broader purpose of the career development grant to provide the awardee with the training and expertise needed to transition into an independent global health researcher with expertise in the science of violence- and health-related intervention in informal settlements.

Constantinos Kurt Wibmer, PhD. Rational structure-guided design of broadly reactive next-generation therapeutics to treat non-communicable snakebite in Africa

Grant associated with: R21TW011454, Constantinos Kurt Wibmer,

Country of focus: South Africa

Abstract:

Snakebite is a neglected tropical disease that affects more than half a million people every year. It is a disease that disproportionately impacts young individuals in rural or impoverished communities. If untreated, snakebites result in the loss of limbs, organ failure, and death. While antivenom is effective at treating snakebite, it is in short supply, expensive, temperature labile, and can only be safely administered at a hospital. This is, in part, because antivenom is purified from the plasma of hyperimmunized animals, resulting in significant impurity and risk for anaphylaxis. To modernize antivenom therapies, we and others are investigating novel recombinantly produced antivenom alternatives. Here, we show how a rationally designed immunoglobulin chimera can bind key neurotoxic venom toxins from genetically divergent snake species native to both Africa and Asia. We use structural data to explain this cross-reactivity and highlight key binding regions that might be further improved through structure-guided protein design. Together with an in-house pipeline we simultaneously developed for the discovery of monoclonal antibodies from antivenom producing horses, these data provide exciting lead candidates for further structural study. This will form the basis for increasing capacity for structural biology on the African continent, which is a critical component of therapeutic design. Increased local capacity will ensure greater emphasis is placed on neglected public health issues unique to the African continent.

Robert Ssekitoleko, EngD, Strengthening Research Capacity in Innovative Global Health Technologies for Non-Communicable Diseases in Uganda (SIGHT program)

Grant associated with: 1 D43 TW012260-01, Andrew Martin Rollins (PI) and Robert Ssekitoleko (MPI)

Country of focus: Uganda

Abstract:

The burden of non-communicable diseases and disorders (NCD) is growing rapidly in low- and middle-income countries (LMIC) and sub-Saharan Africa (SSA) and Uganda particularly. Developing capacity for biomedical research in LMICs is necessary for managing these new healthcare challenges, and encouraging progress is being made. We assert that building capacity in particular for Biomedical Engineering (BME) research is critical to development of much-needed screening, diagnostic, and therapeutic technology relevant to the context of LMICs. Training programs to build this capacity are lacking. We have identified three broad categories of NCDs to target in the SIGHT program that will particularly benefit from building capacity for technology innovation: cardiovascular disease, blood disorders, and chronic movement disorders. These target areas have been identified as critical public health needs by program leaders and other stakeholders. We have also identified four areas of technology focus as highest priorities for building capacity in BME research expertise at Makerere University (MU) in Uganda. These are: biomaterials and drug delivery, point-of-care diagnostics, biomedical imaging, and data analytics and artificial intelligence. These technology tools are cross-cutting in their potential to address high-priority NCD healthcare needs.

The SIGHT program has been designed with the long-term goal of building and strengthening the capacity of academic, public, private, and NGO institutions in Uganda to conduct biomedical engineering research, train biomedical engineers up to a PhD level and grow a local biomedical engineering industry based on local needs. SIGHT aims to contribute to this goal by: (1) Training 6 Ugandan students in the BME Ph.D. program at Case Western Reserve University CWRU; (2) Supporting research projects for M.S. students at MU in BME-adjacent fields; and (3) Providing opportunities for MU investigators to enhance their research experience and expertise.

This program builds on the extensive 32-year training record of partnership between CWRU and MU.

Anderson Soriano, M.D., Effects of Home-Based Respiratory Physiotherapy and Telephone Based Psychological Support on Pulmonary and Mental Health Outcomes in Peru: A Feasibility Randomized Controlled Trial

Grant associated with: D43TW011502-01, William Checkley (contact PI), Research training in chronic, non-communicable respiratory diseases in Peru

Country of focus: Lima, Peru

Personal/Lab website: <https://climaupch.com/>

Abstract:

Introduction: We sought to determine whether a 6-week integrated rehabilitation program improved pulmonary function, physical and mental health outcomes in patients discharged alive after surviving a severe COVID-19 pneumonia. **Methods:** Parallel, open-label, feasibility randomized controlled trial in participants aged 18-75 years who were discharged for severe COVID-19 pneumonia. The intervention consisted of 12 in-person home respiratory rehabilitation sessions and 6 telephone based, emotion-centered problem-solving therapy psychological sessions. We measured the 6- minute walk test (6MWT), forced expiratory volume in 1 s (FEV1), forced vital capacity (FVC), Patient Health Questionnaire (PHQ-9), General Anxiety Disorder (GAD-7), Impact of Event Scale Revised (IES-R) and Short Form 36 health survey (SF-36). Following the recommendation by Cocks and Torgerson, we used a one-sided 80% confidence interval to determine if this feasibility trial should proceed to a phase III trial. **Results:** We randomized 103 participants (mean age, 48 years; 71% men). There were no differences at baseline assessments of outcomes between the two groups. Intervention participants walked 15 and 45 meters more during a 6MWT at 7 and 12 weeks, respectively, than controls after accounting for baseline distance. In both instances, the one sided 80% lower bound was above 0. Intervention participants also had a greater improvement of lung function for week 7 (mean difference FEV1, 0.05 L; 95% CI, -0.14 to 0.24; mean difference FVC, 0.10 L; 95% CI, -0.12 to 0.31) and at week 12 (mean difference FEV1, 0.10 L; 95% CI, -0.18 to 0.37; mean difference FVC, 0.15 L; 95% CI, -0.17 to 0.47). Likewise, the prevalence of depression (percentage difference PHQ-9, 24.3%; 95% CI, -4.3 to 44.3), anxiety (percentage difference GAD-7, 20.7%; 95% CI, 0.8 to 40.6) and post-traumatic stress (percentage difference IES-R, 14.0%; 95% CI, -5.7 to 33.7) were lower in the intervention group at week 2 after hospital discharge. At week 7, the intervention group had a greater improvement of physical (mean difference, 10.8; 95% CI, -1.8 to 23.4) and social (mean difference, 6.43; 95% CI, -0.65 to 13.5) function on the SF-36. **Conclusion:** We demonstrated that an integrated rehabilitation program administered over a 6-week after discharge in Lima, Peru was both feasible and acceptable, and had positive benefits on physical and pulmonary function and on mental health during the 12 weeks of follow-up. Measured improvements in the primary outcome of 6MWT distance recommend that we consider a phase III trial to test the efficacy of our integrated rehabilitation intervention in a larger sample.

Main recent publications:

Soriano AN., Coico-Lama AH., Flores E. C., Galvez-Buccollini J, Gianella G, Hartinger S, et al. Effects of Home-Based Respiratory Physiotherapy and Telephone-Based Psychological Support on Pulmonary and Mental Health Outcomes in Peru: A Feasibility Randomized Controlled Trial. In: A16 PULMONARY REHABILITATION: TRANSFORMING OUR PRACTICE IN 2022 [Internet]. American Thoracic Society; 2022 [cited 2022 Jun 14]. p. A1029–A1029. (American Thoracic

Society International Conference Abstracts). Available from:

https://www.atsjournals.org/doi/abs/10.1164/ajrccm-conference.2022.205.1_MeetingAbstracts.A1029

Soto-Cabezas MG, Reyes MF, Soriano AN, Rodríguez JPV, Ibargüen LO, Martel KS, et al. COVID-19 among Amazonian indigenous in Peru: mortality, incidence, and clinical characteristics. *Journal of Public Health*. 2022 May 30;fdac058.

Amy Sanyahumbi, MD, Dire prognosis of rheumatic heart disease in young people in Malawi

Grant associated with: 5K01TW010860-05, Amy Sanyahumbi, Improving Adherence to Benzathine Penicillin in Children with Rheumatic Heart Disease in Malawi, Africa

Country of focus: Malawi

Abstract:

Background: This study of Malawian children with rheumatic heart disease (RHD) sought to detect demographic, clinical, and echocardiographic risk factors for mortality.

Methods: Pediatric patients with RHD were recruited from March to October, 2018 from clinic rosters and inpatient consults in Lilongwe and Blantyre, Malawi. An echocardiogram was performed upon study enrollment. Cox regression analyses were performed to assess for factors associated with mortality over nearly 2 years of follow-up.

Results: Of 118 patients, nearly two-thirds were female (64.4%) and median age was 12 (IQR 10-14). Just under half (47.0%) lived >40km from a tertiary care center. There was a high prevalence of severe mitral regurgitation (65.3%), and pericardial effusion was present in 18.6%. Nearly a quarter (23.7%) died during follow-up. In univariable Cox regression, living >40km from tertiary care, living in a remote area, moderate or severe malnutrition, taking a beta blocker, severe mitral stenosis, any severe valve disease, severe left atrial enlargement, and presence of a pericardial effusion were statistically significant risk factors for mortality ($p < 0.05$). In the adjusted model, living >40km from tertiary care (HR 2.66, CI 1.06-6.07, $p = 0.037$), malnutrition (mild HR 3.92, CI 1.03-14.91, $p = 0.045$; moderate HR 7.41, CI 1.92-28.54, $p = 0.004$; severe HR 4.91, CI 1.44-16.71, $p = 0.011$), beta blocker use (HR 4.62, CI 1.63-13.10, $p = 0.004$), and presence of a pericardial effusion (HR 6.96, CI 3.00-16.13, $p < 0.001$) remained independent risk factors for mortality.

Conclusions: This study of Malawian children emphasizes the dire prognosis of RHD in under-resourced settings and provides potential area of focus for targeted intervention.

Rebecca SB Fischer, Ph.D., MPH DTM&H, Steps toward cracking a 25-year medical mystery

Grant: 5K01TW010863, Rebecca Fischer, Investigation into the Epidemic of Unexplained Kidney Disease in Nicaragua: Understanding the Acute Clinical Scenario and Natural History of Disease in Mesoamerican Nephropathy.

Country of focus: Nicaragua

Personal/Lab website:

<https://public-health.tamu.edu/directory/fischer.html>

<https://health.tamu.edu/experts/rebecca-fischer.html>

https://www.researchgate.net/profile/Rebecca_Fischer2

<https://rebeccafischer.academia.edu/>

<https://www.ncbi.nlm.nih.gov/sites/myncbi/rebecca.fischer.1/bibliography/42191695/public/?sort=date&direction=descending>

Abstract:

A chronic kidney disease of unknown etiology (CKDu) was first reported in 2002 by an astute nephrologist running a dialysis clinic in El Salvador who reported a trend toward young individuals in his clinic without traditional risk factors. PAHO has now attributed over 50,000 excess deaths to this epidemic. Historically referenced as CKD, our team documented clinical and pathologic changes at acute renal episodes with the hopes that identifying the disease at the earliest possible manifestation could facilitate epidemiologic & etiologic investigations as well as present potential opportunities for clinical intervention. Our foundational clinical and etiologic studies demonstrate an aggressive disease with young-adult onset but inadequate understanding of adolescent or pediatric renal health in this context. CKDu is most often studied in adult, occupational cohorts, yet prevention strategies will require better understanding of earlier life potential risks, vulnerabilities, and insults. Thus, we sought to develop an all-ages renal cohort through community-clinic based renal surveillance to document renal disease across the lifespan in a region of Nicaragua heavily burdened by excess kidney morbidity and mortality. We sought to collect biospecimens for banking, document clinical and epidemiologic data for analysis, and conduct longitudinal follow-up. We sought also to validate our prior work by attributing etiology and CKDu consider underlying risk factors or vulnerabilities, and explore contributing etiologic factors for renal disease in general. Plans, challenges, adaptations, and collaborations will be shared.

Main recent related publications:

2022 Holliday, M., Li, Q., Bustamante, E., Niu, J., Huang, L., Espina, I., Dominguez, J., Truong, L., Murray, K., Fan, L., Anumudu, S., Shah, M., Fischer RSB., Vangala, C., Mandayam, S., Perez, J., Pan, J., Ali, S., Awan, A., Sheikh-Hamad, D. Potential Mechanisms Involved in Chronic Kidney Disease of Unclear Etiology. *Clinical Journal of the American Society of Nephrology*. *In Press*.

2021 Strasma, A.* , Worrall, H.* , Vangala, C., Silva, R., Mandayam, S., Murray, K.O., Fischer, RSB. Urinary findings among adults and children in a region of Nicaragua with a high burden of Mesoamerican Nephropathy. *Kidney International Reports* 7(2): 327-329. (DOI: [10.1016/j.ekir.2021.11.015](https://doi.org/10.1016/j.ekir.2021.11.015)).

2021 Byron Flores, Eduardo Ramírez, Adonis Moncada, Nefir Salinas, Rebecca Fischer, Carmen Hernández, Brenda Mora-Sanchez, Jessica Sheleby-Elías, William Jiron, J.L. Balcazar.

Antimicrobial effect of *Moringa oleifera* seed powder against *Vibrio cholerae* isolated from the rearing water of shrimp (*Penaeus vannamei*) postlarvae. *Letters in Applied Microbiology* 74: 238-246. (doi.org/10.1111/lam.13604)

2021 Byron Flores Somarriba, Jessica Sheleby-Elias, Tania Pérez-Sánchez, Rebecca Fischer, José Múzquiz, Héctor Fuertes, Nabil Halaihel, William Jirón, Christiane Duttmann. Identification of *Leptospira* spp in rodents captured during human leptospirosis outbreaks in Nicaragua. *EcoHealth* 17(4):469-476. <https://pubmed.ncbi.nlm.nih.gov/33834316/> (PMID: 33834316; DOI: 10.1007/s10393-021-01520-4).

2020 Fischer, RSB, Sanderson, W., Costa, M., Mandayam, S., Chavarria, D., Murray, K.O. Evidence of nickel and other trace elements and their relationship to clinical findings in acute Mesoamerican Nephropathy: A case-control analysis. *Plos One*, 20 Nov 10. (PMID: 33170853, DOI: 10.1371/journal.pone.0240988; <https://pubmed.ncbi.nlm.nih.gov/33170853/>).

Rebecca SB Fischer, Ph.D., MPH DTM&H, Acute Kidney Injury and Chronic Kidney Disease in a Large Historic Cohort in Nicaragua

Abstract:

Although historically referred to as a chronic kidney disease (CKD), evidence demonstrates the acute disease process in Mesoamerican Nephropathy (MeN). Acute MeN typically presents as acute kidney injury with systemic inflammation that can progress rapidly to CKD. Our goals with this analysis were to describe the initial, acute clinical presentation in a large cohort of historic MeN CKD cases, validate a proposed clinical case definition, and document disease progression. We conducted a retrospective study at a large sugar estate in Nicaragua, where hard copy medical records were stored by the hospital on all individuals diagnosed with CKD since 1995. We abstracted clinical data from the first above-range serum creatinine in each record. Data were available on 746 cases attributed to MeN, diagnosed at various stages of CKD: 18% Stage 1, 40% Stage 2, 30% Stage 3, and 12% Stage 4-5. Patients were male (98%) and young (median 33 years). Mean acute serum creatinine was 2.0 ± 1.3 mg/dL and sometimes coincided with back pain (26%), fever (21%), leukocytosis (35%), neutrophilia (53%), anemia (74%), hyperuricemia (50%), electrolyte imbalance (34%), leukocyturia (99%) and leukocyte casts (17%); 20% were recorded as being asymptomatic. Prior diabetes (2%) and hypertension (8%) were rare. Available baseline creatinine revealed AKI in 84% of patients (AKIN criteria), with on average 2 (1 to 8) AKI episodes over a mean 3.2 years before CKD diagnosis. This evidence confirms AKI as a precedent for CKD in most cases, some with systemic inflammation. Other important findings include exceedingly high prevalence of anemia, present at AKI, without evidence of longstanding renal difficulty. This study underscores rapidity of progression from acute to chronic MeN. Further understanding of the disease process and baseline physiology may indicate opportunities to intervene in disease progression or suggest susceptibility factors that may be addressed to prevent AKI.

Rebecca SB Fischer, Ph.D., MPH DTM&H , Could Infectious and Toxic insults contribute to the Epidemic of CKDu?

Abstract:

In the tropics, infectious and toxic agents play an important role in kidney disease. Clinical and histopathologic evidence suggests an infectious or toxic insult associated with acute tubulointerstitial nephritis in the genesis of MeN. Yet these two longstanding hypotheses on its etiology have been inadequately explored. In 2015, we began surveillance for AKI and CKD at a large private hospital serving workers at an agricultural estate in western Nicaragua, a hotspot for MeN. Healthy control counterparts without evidence or history of renal impairment were also identified. Urine, serum, and toenails were collected. We conducted serology and PCR for *Leptospira* and Hantavirus; for a subset (n=10), urine, serum, and renal tissue underwent genomics analysis. Toenail clippings were analyzed on 18 cases and 36 controls for heavy metals and trace elements by ICPMS. We demonstrate a high prevalence of exposure to *Leptospira* (25%) and Hantavirus (12%), but not higher among cases than controls. Pathogen discovery yielded no commonalities among cases. Analysis of toenails revealed that nickel was the only element common to all cases but was detected in only 58% of controls ($p=0.001$) and was also present in higher concentrations in nails from cases (1.55mg/kg, 0.17-42.65; $p=0.003$).

Clinical events in nickel toxicity can mirror what has been documented during acute MeN-associated AKI events, including focal inflammatory damage at the corticomedullary junction, anemia, leukocytosis, and constitutional symptoms. Nickel, a naturally occurring trace element that has known acute renal toxicity but has rarely been the subject of toxicological studies, should be further explored through human and environmental investigations to assess a role in MeN, particularly through repeat or chronic exposures, even at low levels through geogenic or anthropogenic. In this limited exploratory analysis, infections were not implicated in the acute disease process of MeN patients.

Rebecca SB Fischer, Ph.D., MPH DTM&H, The epidemic of kidney disease of unknown etiology in Central America is an important cause for emergent dialysis utilization in Houston, Texas

Abstract:

Mesoamerican Nephropathy (MeN) is a kidney disease of unknown origin that disproportionately affects young males in Central America. This retrospective analysis sought to investigate the burden of MeN in the emergent dialysis unit in Harris County, Texas, a diverse city that is home to a large population of immigrants from MeN-affected areas. In Harris County, emergent dialysis is available at no cost through the county healthcare system, and the majority of undocumented immigrants with end stage renal disease (ESRD) undergo dialysis only on an emergent basis. The system is less than ideal, since it makes dialysis available only if it is considered life-saving, forcing patients to forego needed treatment until they are suffering urgent physiologic effects, which ultimately results in poorer quality of life, more costly healthcare, and worse health outcomes.

We sought to understand if individuals with MeN are accessing emergent dialysis in Houston by conducting a retrospective analysis on 346 emergent dialysis patients during 2012-2015. We found the majority (66%) of ESRD was attributed to diabetes, hypertension, or both. However, at least 18% of this population had an unknown cause of their kidney disease and could be candidates for MeN. The median age in this group was 45, 59% male, and most had also been diagnosed with hypertension (94) as is frequently the case with ESRD, though it was not implicated in the cause of their renal disease. Based on this analysis, MeN could be responsible for 12%-18% of emergent dialysis in Harris County, at least in this heavily-attended public hospital at the Texas Medical Center.

Waranuch Pitiphat, DDS, MPH, MS, SD, Clinical and Public Health Research Training in Oral Health for Southeast Asia

Grant associated with: 1D43DE032294-01A1, Waranuch Pitiphat - PI, Clinical and Public Health Research Training in Oral Health for Southeast Asia

Country of focus: LMICs in Southeast Asia (Thailand, Indonesia, Malaysia, Philippines, Vietnam, Cambodia, Laos, Myanmar)

Abstract:

This program is designed to sustainably strengthen the oral health research capacity among LMICs in Southeast Asia by establishing a training hub in Thailand and fostering a network of regional researchers. The program is built upon long-term collaborative efforts between the Faculties of Dentistry at Khon Kaen University (KKU) and Thammasat University (TU) in Thailand

and the University of Washington (UW) School of Dentistry. The program includes 4 major collaborating institutions in Indonesia, University of Malaya, University of Philippines Manila, and Can Tho University of Medicine and Pharmacy in Vietnam. Five levels of training are: (1) Short-term training. A series of 5-day workshops on clinical research methods, conducted in Thailand or other Southeast Asian countries annually; (2) Intermediate-term training. An 8-week program at the UW Summer Institute in Clinical Research Methods in Seattle; (3) Medium-term training. A Short Course Training in Research Methodology & Biostatistics offered annually at KKU in Thailand. This is an intensive program in which the trainees will take didactic courses and develop an individual research proposal at the end of the 4-month course. Medium-term trainees can apply for the next level of training; (4) Non-degree research training. A research fellowship program allows the trainees to do research in home country under guidance of a local mentor as well as UW and Thai faculty; (5) Long-term training. The program will support dentists from Southeast Asia to pursue PhD in Oral Sciences at the two Thai universities. After completing 1-year coursework in Thailand, PhD students will attend the Summer Institute in Seattle and work with UW mentors to develop a dissertation research proposal to be carried out in their home country.

Nino Paichadze, MD MPH, United States-Zambia Addressing Risk Factors for Non-Communicable Diseases

Grant associated with: D43TW011952, Adnan A. Hyder, United States-Zambia Addressing Risk Factors for Non-Communicable Diseases

Country of focus: Zambia

Abstract

Africa has one of the highest burdens of non-communicable diseases (NCDs) and Zambia has one of the highest NCD burdens where it contributes to one in five premature deaths and up to 32% of all deaths annually. Two critical gaps in addressing the lifelong consequences of these NCD risk factors in Zambia are a lack of trained human resources and limited data. United States-Zambia Addressing Risk Factors for Non-Communicable Diseases in Zambia (US-Zambia Risk-NCD) program will address these barriers through a collaborative training program which will develop human resources in Zambia to generate data and apply it for concerted action to reduce the growing burden of ill health and disability from NCD risk factors across the lifespan. Our program is based on close collaboration between the Milken Institute School of Public Health at the George Washington University (GWSPH) and University of Zambia School of Public Health (UNZA-SPH). The program promotes a sustainable research enterprise focused on major risk factors for NCDs and enables dissemination of research to influence policy in Zambia through developing a core group of researchers focused on major risk factors for NCDs at UNZA; promoting research around key national priorities for NCDs and risk factors in Zambia; developing NCD risk factor “Research to Policy (RTP) Forum” in Zambia; and creating a formal research unit on NCDs and risk factors in Zambia. The program will enhance capacity for research, training and policy direction on the long-term health and economic consequences of major risk factors for NCDs, which are large contributors to Zambia’s burden of disease. It will address the major gap in chronic disorders by focusing on key risk factors and establish mechanisms to ensure long-term sustainability for a strong research enterprise in Zambia.

Ahmed Kolade OLOYO (Ph.D.), Oxygen sensing mechanism(s) in fetal programming of salt-sensitive hypertension

Grant associated with: D43TW001234-01, Ahmed Kolade OLOYO, Oxygen sensing mechanism(s) in fetal programming of salt-sensitive hypertension

Country of focus: Nigeria, USA

Abstract:

Heritability of salt-sensitive hypertension and high susceptibility of offspring to maternal perinatal high salt diet (HSD) suggests that salt-sensitive hypertension has its origin early in life. However, the mechanism(s) underlying the early origin of salt-sensitive hypertension is not clear. Salt stress increases tissue demand for oxygen. In response, the tissue produces hypoxia inducible factor - 1 alpha (HIF-1 α) which in turn activates its target antihypertensive genes (NOS-2 and HO-1) which consequently prevent blood pressure (BP) elevation in response to the salt stress. However, the activity of HIF-1 α is closely regulated by prolyl hydroxylase domain-containing proteins 2 (PHD2). In salt-sensitive hypertension, the regulatory function of PHD2 on HIF-1 α is impaired by HSD, consequently the ability of HIF-1 α to activate its target genes and prevent BP elevation in response to HSD is reduced. Likewise, impairment of the normal vasodilatory response to HSD is considered the initiator of the pressor response in salt-sensitive hypertension. Considering the effect of HSD on tissue oxygen demand and the additive effect of the low oxygen tension environment of the *in-utero* life, we seek to investigate whether maternal exposure to perinatal HSD primes the fetus' vascular oxygen sensors thereby, programming the offspring vascular beds to poorly respond to salt stress and develop salt-sensitive hypertension in adult life. In our laboratory, we have used animal models to study the mechanisms that underlie the pathophysiology of salt-sensitive hypertension – an interest that stemmed out of high percentage of salt-sensitive hypertension in our population. The outcome of this study may open new areas for further experimentation and possible therapeutic targets for effective ways of preventing / controlling arterial BP and salt-sensitive hypertension.

Hoa Nguyen, MD, Ph.D. Associate Professor in Epidemiology, Department of Population and Quantitative Health Sciences, University of Massachusetts Chan Medical School, Training Program for Strengthening Research Capacity in Non-Communicable Diseases in Vietnam

Grant associated with: Grant #: D43 TW011394-01, Grant contact PI: An Dao, Grant title: Training Program for Strengthening Research Capacity in Non-Communicable Diseases in Vietnam

Country of focus: Vietnam

Abstract:

Background. Vietnam has been facing an increasing burden from non-communicable diseases (NCDs) over the last several decades, with especially increases in the morbidity and mortality from cardiovascular disease, cancer, chronic lung disease, and diabetes. We are implementing a 5-year (2019-2024) educational and research training program entitled “Training Program for Strengthening Research Capacity in Non-Communicable Diseases in Vietnam.”

Methods. The training program is built upon a robust and rapidly expanding program of extramurally funded research, with joint leadership from Hanoi Medical University (HMU) and University of Massachusetts Chan Medical School (UMCMS) investigators. Aim 1. Develop a

research and training program in NCDs that fits Vietnam's needs and resources as articulated by the Vietnam Ministry of Health: (a) Establish a new Postdoctoral Fellowship program that will equip early-stage investigators to establish themselves as independent, extramurally funded scientists; (b) Establish a new Master in Epidemiology in English program that will provide clinicians and researchers with the research tools necessary to leverage their clinical training and experience to design and carry out high quality research studies. Aim 2. Establish a Research Unit in NCDs at HMU hospital to organize training courses, provide resources for research methodology and data management, enable transdisciplinary relationships across departments, institutes, and clinical systems, and provide linkages and critical support for longitudinal mentoring relationships among program trainees.

Results. The program recently finished study year 3. A total of 10 master students have been enrolled in the Master in Epidemiology in English program and 7 postdoctoral fellows have been recruited. Three papers have been published by program trainees to date. A Research Unit in NCDs has been established at HMU hospital with ongoing training and research activities.

Conclusions. This training program has been successfully implemented during the past 3 years in Vietnam with significant achievements both in training and in research.

Adriana Monge, M.S., M.P.H., Aflatoxin exposure and hepatocellular carcinoma in Mexico

Grant associated with: 1R21TW011720-01, Martin Lajous, Aflatoxin exposure and hepatocellular carcinoma in Mexico

Country of focus: Mexico

Abstract:

Hepatocellular carcinoma (HCC) is a growing disease in Latin America. Previously thought to mainly affect sub-Saharan Africa and southeast Asia, HCC is now the fourth cause of cancer deaths in Mexico. Surprisingly, the epidemiological characteristics of HCC risk factors in the area is very different from the traditional ones. In Mexico, HCC appears to affect both women and men in the same proportion, with a low prevalence of hepatitis B and C virus, as well as low chronic alcohol abuse. However, the country has an important obesity epidemic and a high prevalence of the metabolic syndrome. This R21 grant aims to integrate circulating aflatoxin B1-albumin adduct (AFB1-lys) biomarkers for expanded use in previously collected and stored samples from Mexico's National Health and Nutrition Survey's (ENSANUT 2018) biorepository and explore differences in AFB1-lys according to demographic characteristics and determine the distribution of HCC risk factors (including HBV, HCV, alcohol, obesity, diabetes, metabolic syndrome, maize-based foods). Also, we will identify aflatoxin-induced mutations in retrospectively identified HCC. Furthermore, we will determine the feasibility of prospectively identifying 100 HCC cases, obtaining risk factor information, and (when possible) collecting blood and tumor tissue for determination of AFB1-lys adducts in serum and TP53 gene mutations in tumor tissue. Preliminary analysis show that of 955 men and women, 2.6%(95%CI 0.94,7.13%) of men and 7.3%(95%CI 4.46, 11.82) of women received a transfusion, 0.10(95%CI 0.03,0.32%) of men and 0.5% (95%CI 0.10, 2.48) of women have hepatitis C, and 1.8%(95%CI 0.2, 11.6%) of men and 0.4% (95%CI 0.05,2.6) of women have hepatitis B.

Martin Lajous, MD, ScD, Advancing liver cancer research in Mexico

Grant associated with: 1R21TW011720-01, Martin Lajous, Aflatoxin exposure and hepatocellular carcinoma in Mexico

Country of focus: Mexico

Abstract:

Mexico and Central America have emerged as areas with a significant HCC burden with a potentially different proportion of risk factors. In this region HBV and HCV seroprevalence appear to be low and an uncharacteristic HCC mortality pattern in which men and women are equally affected is present. We have advanced significantly in the development of an HCC research network of clinicians, researchers and institutions in Mexico. We will present plans for advancing HCC research in the region through a population-based case-control study harmonized to an existing NCI-funded HCC study in Guatemala

Kammi K. Schmeer, M.A., Ph.D., Nicaragua Health and Stress Study

Grant associated with: 1R21TW011131-01, Schmeer, Kammi K. (PI) "Social Contexts, Stress and Non-Communicable Disease Risk Factors across the Life Course: Pilot Study in Nicaragua."

Country of focus: Nicaragua; Local collaborators: Center for Demographic and Health Research (CIDS), in León, Nicaragua.

Abstract:

This study builds on an existing cohort of almost 500 caregivers (mothers) and their focal children (ages 3-11 years) in 2012. In 2017, we began the design of a follow up study to provide a new focus on NCD-related risk factors emerging among the women and their now adolescent children. Due to extreme political unrest in Nicaragua in 2018, the survey design, interviewer training and data collection processes were delayed until 2019. With the onset of COVID-19 in early 2020, the study was further delayed, and participation was reduced to 72% of the original sample participants. Despite the pandemic, interview teams completed extensive surveys (with the mother and adolescent interviewed separately) and collected numerous health biomarkers during the summer of 2020. By September 2020, 349 mothers and 358 adolescent children the study. Among women (mothers) we assessed childhood and adult adversities, food insecurity, perceived stress, mental health and health biomarkers (body mass index, waist circumference, blood pressure, and lipid panel). Among adolescents we asked about social determinants of NCD risk factors such as schooling, food insecurity, substance use, mental health, perceived stress, and home/childhood conditions; and collected self-rated health, BMI and hair samples (for later analysis of cortisol, a physiological marker of stress). Goal is to assess how socio-economic status, food insecurity, other forms of social/economic adversity in childhood and adulthood are associated with 1) stress; 2) diagnosed diseases and self-rated health; 3) mental health; and 4) biomarkers of NCD risk factors in low-resource setting.

Main Publications:

Hays, Jake H.* and Kammi K. Schmeer. 2020. "Age at First Sex and Adult Mental Health in Nicaragua." Demographic Research.

Schmeer, Kammi K., Barbara A. Piperata. 2017. "Household Food Insecurity and Child Health." Maternal & Child Nutrition. Schmeer, Kammi K., Barbara A. Piperata, Andres Herrera, Mariano

Salazar, and Franciso Centeno Cardenas. 2015. "Maternal Resources and Household Food Security: Evidence from Nicaragua." Public Health Nutrition.

Annette Fitzpatrick, Ph.D., An innovative way to build research capacity on cardiometabolic risk factors and diseases by integrating training in academia: An Experience from Nepal

Grant Associated with 1 D43TW011596-01: Building Capacity to Address the Burden of Cardometabolic Risk Factors and Diseases in LMICs

Country of Focus: Nepal

Abstract:

There is a need of building research capacity on cardiometabolic diseases (CMD) in countries like Nepal where it was only recently realized that CMDs account for most of the deaths and disability-adjusted life years in the population. Integrating such research training program in academic institutions to build new generation of public health cadres can be an effective and efficient approach in such capacity-building efforts. We incorporated a fellowship program to train public health students (MSc Public Health in Epidemiology and Global Health) in the field of CMD research. Kathmandu University School of Medical Sciences (KUSMS) has been running the pioneering training program in public health in Nepal with special tracks on Epidemiology and Global Health. Ten students, selected as fellows (every year) for this CMD research program received relevant online courses from University of Washington (UW). The program also supported their research costs providing them an opportunity to pursue relevant research activities in the field of CMD. Two of the faculty members, previously trained at UW in CMD research have been the local mentors of the program. The Principal Investigator and the team from UW provide overall guidance. The courses taken within the fellowship program are also embedded within the Master degree curricula thereby ensuring better integration of fellowship program with regular academic program. Additionally, the program also supports faculty development through Master and PhD scholarships (for KUSMS faculty) at UW thereby building a critical mass of people to lead these efforts in the long-run. This is a unique model of capacity building in the field of CMD research and serves as an example for other settings as well.

Ghada El-Hajj Fuleihan, MD, MPH, FRCP, Capacity Building in Non-Communicable Diseases at the American University of Beirut

Grant associated with: D43TW009118, Ghada El-Hajj Fuleihan, Capacity Building in Non-Communicable Diseases At the American University of Beirut

Country of focus: Lebanon

Personal/Lab website:

<https://www.aub.edu.lb/sharp/Pages/default.aspx> <https://www.aub.edu.lb/fm/CaMOP/Pages/default.aspx>

Abstract:

The Scholars in HeAlth Research Program (SHARP), is a unique capacity building training program, launched in summer 2013 to advance patient-oriented, and population-oriented research for Non-Communicable Diseases (NCDs), in Lebanon and the region. The initial five years focused on delivering a 12-credit, 7 weeks, intense summer diploma, with a curriculum focusing on quantitative research methods. These are Library Science, Ethics, Epidemiology,

Biostatistics and Large Datasets. Trainees could then go on to complete 1-2 years of research, and the more ambitious go on to obtain a Master in Health Research. Building on the pillars of the SHARP core curriculum, the competitive renewal 2020-2025 expanded in depth and breadth. Its aims reflect dynamic changes in our societies, national health priorities, advances in information technology, and the health research landscape. They are: Aim 1: Redesign and deliver the intense 7 weeks Summer Diploma into a 2-semester certificate format to enhance flexibility, which runs in tandem with the summer Diploma; Aim 2: Develop and deliver new advanced quantitative methods modules to expand its core curriculum; Aim 3: Launch a mentorship and Career Advancement Network Program (SHARP CAN); Aim 4: Launch the Scholars Research Fellowship Grant Program, to provide SHARP trainees with stipend support, to complete an NCD project. We have also introduced SHARP summer diploma as an elective into the Medical School curriculum and will carve an MD, MSc Health track for interested medical students. Our trainees are mostly from Lebanon, but other countries are Syria, Jordan, Palestine, Egypt, Bahrain, Iraq, Libia, Pakistan, Australia, and the United Kingdom. To-date, we have graduated 230 summer diploma students, 15 Online diploma students, 19 Master students and 9 Master students are in progress. In addition, one master student finished the course work but not the thesis. Their research is focusing on NCDs, with an average of 10.7 publications per trainees, compared to the NIH D43 record of 2.016. Challenges include financial collapse, faculty and staff brain drain, and a shrinking pool of mentors. The Continued NIH and Institutional support as well as philanthropy have allowed the program to thrive despite major challenges, and we are currently investing in training young faculty recently joining AUB grow the pipeline of future physician-scientist and mentors at the grassroots.

These Aims allow us to: 1) reach a wider and more diversified pool of trainees, nationally and regionally; 2) cultivate the culture of multidisciplinary teams and mentorship networks; 3) grow the pipeline of future mentors at the grassroots; 4) afford the training experience to a larger number of trainees; 5) set the path for trainees to become independent investigators.

Pamela Maposa, Ready to Use Therapeutic Food Paste for Improving Caloric Intake and Growth of Children 6 -60 Months with Sickle Cell Disease in Zimbabwe: Feasibility and Acceptability

Country of Focus: Zimbabwe

Abstract:

The rising prevalence of under-nutrition in children with sickle cell disease is contributing to the morbidity and mortality associated with chronic diseases such as sickle cell disease. According to the literature, this can be both macro and micro-nutrient deficiency. The ready-to-use therapeutic food paste is a peanut-based supplement that has been shown to improve growth outcomes and it will be given to the participants during the study to test the feasibility and acceptability of this implementation. The method of study is an implementation science.

Scott Ickes, Associate Professor Biological and health Sciences, Wheaton College, Breastfeeding Implementation Research in Kenya

Grant associated with: 3K01TW010827-05S1 , Scott Ickes (PI), Identifying risk factors for sub-optimal breastfeeding and opportunities for breastfeeding promotion among working mothers in Kenya

Country of focus: Kenya

Abstract:

Objectives. As part of ongoing research on breastfeeding promotion among mothers employed in commercial agriculture in Kenya, we aimed to understand mothers' willingness to use currently available breastfeeding supports at their workplaces and expected use if new supports were made available.

Methods. We conducted a cross-sectional survey with closed and open-ended questions among 300 formally employed mothers of children ages 12 months and younger at two public healthcare facilities in Naivasha, Kenya, and community transportation sites for commercial farms and hotels. We surveyed maternal demographics, healthcare access and utilization, employment history, mother's awareness of current breastfeeding supports at her workplace, and self-reported willingness to use additional breastfeeding supports.

Results. The most available reported current workplace supports were schedule flexibility to arrive late or leave early (87.8%) opportunity to return home during lunch (24.7%), and company-funded daycare in the community (7.6%). Few mothers reported availability of lactation rooms (3.6%), on-site daycare (3.3%), transportation to breastfeed during lunch (2.3%), a refrigerator for expressed milk (1.6%), a manual breastmilk pump (1.0%), or an electric breastmilk pump (0.7%). When asked about willingness to use if made available, mothers were most willing (>80% agreement) to use flexible work schedules to arrive late, leave early, break during lunch, and use transportation to return home to breastfeed. A moderate proportion were willing to use on-site daycare (63.8%), company-funded community daycare (56.9%), on-site lactation rooms (60.5%), refrigeration for expressed milk (49.3%), manual (40.5%) and electric pumps (27.6%).

Mothers noted reluctance to spend more time away from work for fear of missing production targets. They were more willing to use on-site rather than off-site daycare to save transportation time, but noted fears about chemical exposure to children and early arrival times. Privacy concerns, uncertainty about how milk would be identified and stored, and reluctance to share pumps were reasons for hesitation to use on-site lactation rooms.

Breastmilk pumps—especially electric ones—were perceived with hesitancy and seen as "new" and potentially harmful.

Conclusions. The currently available workplace breastfeeding supports do not align well with mothers' demand for or willingness to use certain supports. Current resources – such as on-site daycare – are rare at workplaces but are among the most demanded supports by mothers. Lactation rooms are also rare but demanded less by mothers than on-site daycare or flexible work schedules.

Funding support. Supported by the National Institutes of Health Fogarty International Center

Matthew Bramble, The Gut Microbiome in Konzo

Abstract:

The focus of the talk will be to expand on our recent data geared at understanding the role that the gut microbiome plays in modulating konzo and other food related disabilities. This particular disease is triggered by a monotonous diet of cassava in the DRC and while despite being highly understudied the implications for a reliance on cassava as a staple food source is of global health concern. Using state-of-the-art technologies our data indicate that the gut-microbiome harbors pathways that may contribute to the susceptibility of developing konzo in prone regions of the DR. Congo

Francis Bajunirwe MBChB, MS, Ph.D., Multi-morbidity in Uganda Research Capacity Initiative (MURCI) at Mbarara University of Science and Technology

Grant associated with: 5D43TW011632, Francis Bajunirwe, Multi-morbidity in Uganda Research Capacity Initiative (MURCI) at Mbarara University of Science and Technology

Country of focus: Uganda

Abstract:

Chronic, non-communicable diseases (NCDs) now account for over half of the morbidity in resource-limited settings. Of particular importance is the growing epidemic of multi-morbidity, or the accumulation of chronic conditions, including combinations of both non-communicable and communicable diseases. Despite the growing appreciation of overlapping conditions and their cumulative effect on health outcomes, the majority of disease treatment programs, donor funding mechanisms, and research infrastructures focus on infectious diseases, and such programs remain largely siloed. This separation of efforts results in poor understanding of 1) the interactive effects between and management of, comorbid conditions; 2) lack of attention to region-specific risk factors for multi-morbidity that are likely to differ from high-resource settings; and 3) a near total absence of the requisite laboratory infrastructure for cross-cutting multidisciplinary clinical research.

To respond to these gaps in research infrastructure in Uganda, our project will develop junior faculty expertise in Uganda on multi-morbidity, to measure determinants and consequences of the regional social and environmental risk factors for multi-morbidity and develop laboratory capacity to support clinical research on multi-morbidity.

We will leverage an established collaboration between the Massachusetts General Hospital (MGH) and the Mbarara University of Science and Technology (MUST) Clinical Research Laboratory to support capacity building, quality assurance, and a trans-disciplinary clinical laboratory program to focus on multi-morbidity diagnostics and regionally appropriate risk factor testing. In this D43 research training program, we will leverage a 15-year partnership between MUST and MGH, to provide sustained mentorship and protected research time to 12 promising post-doctoral and junior faculty members at MUST and establish a Ugandan regional center of excellence in multi-morbidity research

Anissa J. Brown, Ph.D. NIH National Institute of Dental Craniofacial Research (NIDCR) Global Health Research Priorities and Funding Opportunities

Title: Chief of the National Institute of Dental and Craniofacial Research (NIDCR) Research Training and Career Development Branch

Abstract:

The National Institute of Dental and Craniofacial Research ([NIDCR](#)) is interested in research training programs that develop research capacity to improve dental, oral, and craniofacial health in LMICs across the lifespan. NIDCR supports basic, translational, and clinical biomedical and behavioral research training in the following areas: dental caries and periodontal diseases; oral infections and host-responses to oral infections; head and neck cancers; dental and craniofacial development; orofacial pain and other oral sensory and motor dysfunctions; salivary glands and disorders, Sjögren's Syndrome, immune dysfunctions in the oral cavity; population-based, oral health promotion and disease prevention; and restoration and regeneration of dental, oral and craniofacial structures. Focus of research training topics in LMICs include, but are not limited to: addressing disparities in access to oral health care; prevention, early detection and intervention

relating to dental, oral and craniofacial diseases and disorders; development and application of genomics, bioinformatics, and computational biology expertise for basic and translational dental, oral, and craniofacial research; integration of oral health care into care for chronic, non-communicable diseases and disorders, and implementation science. See the following links for areas relevant to the [NIDCR mission \(www.nidcr.nih.gov/about-us/mission\)](http://www.nidcr.nih.gov/about-us/mission) and [Strategic Plan \(www.nidcr.nih.gov/about-us/strategic-plan\)](http://www.nidcr.nih.gov/about-us/strategic-plan). Potential applicants are encouraged to contact the NIDCR Program Officer to discuss the relevance of proposed research training.

Yehoda M. Martei, MD, MSCE, Designing multilevel implementation strategies to improve optimal therapy delivery in patients with breast cancer and HIV

Grant associated with: K01TW011481, Yehoda Martei, Fidelity and adaptation of breast cancer resource-stratified treatment guidelines in Botswana

Country of focus: Botswana

Abstract:

Breast cancer is the leading cause of cancer mortality among women globally with over 600,000 deaths reported in 2018. Despite substantial reductions in breast cancer mortality in developed countries, low- and middle- income countries (LMICs) continue to experience a high fatality rate. The disparity is more pronounced in Sub Saharan Africa (SSA) and in HIV prevalent regions, where HIV-infected (HIV+) breast cancer patients have a significantly increased risk of all-cause mortality. Evidence-based resource-stratified guidelines have been developed to promote high quality guideline-concordant breast cancer therapy delivery in SSA. However, critical real-world data are lacking on the treatment fidelity and the implementation of guideline-based care. These data are critical to understanding whether inferior outcomes are related to the quality or extent of guideline implementation or other unrelated factors. If interventions that optimize treatment fidelity and minimize random variability are implemented, targeted outcomes will likely be achieved. The long-term goal is to improve survival outcomes in breast cancer patients in SSA by designing targeted interventions to increase high-quality therapy delivery.

Main recent publications:

Martei YM, Narasimhamurthy M, Setlhako DI, Ayane G, Ralefala T, Chiyapo S, Gross R, Shulman LN, Grover S, DeMichele A. Relative Dose Intensity and Pathologic Response Rates in Patients With Breast Cancer and With and Without HIV Who Received Neoadjuvant Chemotherapy. *JCO Glob Oncol*. 2022 May;8:e2200016. doi:10.1200/GO.22.00016. PMID: 35584347

Razis E, Kassapian M, Andriakopoulou C, **Martei YM**, Zurn SJ, Hammad N, Romero Y, Dafni U, Ilbawi AM, Trapani D. Essential medicines list in national cancer control plans: a secondary analysis from a global study. *Lancet Oncol*. 2022 Mar;23(3):e144-154. doi: 10.1016/S1473-2045(21)00706-3. PMID: 35240089

Lisa Armistead, Ph.D., Understanding Parenting and Preventing Child Maltreatment in Kenya

Grant associated with: 1R21HD094227, Lisa Armistead, Assessing Parenting Practices and Service System to Adapt a Prevention Program to Promote Child Wellbeing in Kenya

Country of Focus: Kenya

Abstract:

Non-communicable diseases (NCD) significantly impact quality and duration of life, especially in low and middle-income countries (LMIC), and child maltreatment substantially contributes to NCD burden across the lifespan. Parenting programs targeting childhood are universally recognized to promote healthy child development and are the primary prevention for child maltreatment and NCD burden during a critical life stage. Lack of culturally competent interventions and poor service infrastructures impede the wide dissemination of parenting programs, especially in LMIC. In Kenya, parenting programs are scarce, yet up to 70% of Kenyans report experiencing maltreatment by their parents due to inadequate parenting skills, misunderstanding of child development, and failure to provide proper medical attention, basic needs, or adequate supervision. Along with Kenyan scholars (Ndetei, Mutiso, & Musyimi) from the Africa Mental Health Research and Training Foundation (AMHRTF), Armistead and Shanley have begun to address this significant need by completing the first systematic evaluation of Kenya's parenting culture and service system infrastructure. Our research identified key strengths and challenges for implementing SafeCare Kenya (SCK), an adapted evidence-based program that improves parenting skills and family functioning, reducing the likelihood of child maltreatment and subsequent risk for NCD. Adaptation was driven by a Stakeholder Task Force comprising parents, community health volunteers (CHVs), community leaders and government personnel. The adaptation process culminated in a Provider Manual and parent materials for parents with children through age five targeting maltreatment risk factors in 3 areas: parent-child interactions, child health, and home safety. We then trained 6 Kenyan providers in SCK to deliver the 8 weekly sessions via mobile phone (virtual delivery was necessitated by COVID-19 restrictions) with 6 mothers. Post intervention, mothers showed significant improvements in parent-child interaction skills and child health and safety knowledge, suggesting that the purported targets of mitigating child maltreatment were addressed.

Main Recent Publications:

Shanley, J., Musyimi, C., Armistead, L., Mutiso, V., Hunsinger, M., & Ndetei, D. (in press). Supporting parents' abilities to care for their young children: Initial testing of a newly adapted parenting program for delivery in Kenya. *International Journal of Child Health and Human Development*.

Robbertz, A., Kim, S.J., Musyimi, C. Tuikong, S., Shanley, J., Mutiso, V., Hucks, O., Ndetei, D. & Armistead, L. (2022). Qualitative Analysis of Health Literacy: Exploring a Kenyan Community's Response to Childhood Illness. *Health Promotion International*
<https://doi.org/10.1093/heapro/daac027>.

Shanley, J., Armistead, L., Musyimi, C., Nyamai, D., Ishiekwene, M., Mutiso, V., & Ndetei, D. (2020). Engaging community voices to assess Kenya's needs and infrastructure to support a child maltreatment prevention program. *Child Abuse and Neglect*, 111, 1-12.
<https://doi.org/10.1016/j.chiabu.2020.104772>

Mohammed K Ali, COllaborative research, implementation, And LEadership training to address chronic Conditions across the lifecourse (COALESCE)

Grant associated with: Grant number : D43TW011404 Grant contact PI : Ali

Country of focus: Ethiopia and India

Personal/Lab website: <https://scholarblogs.emory.edu/coalesce/program-overview/>

Abstract:

The Collaborative Research, Implementation, and Leadership Training to Address Chronic Conditions Across the Lifecourse (COALESCE) is a collaboration between Emory University's

Rollins School of Public Health, the Centre for Chronic Disease Control (CCDC) in India, and Addis Ababa University (AAU) in Ethiopia. In our first three years, the COALESCE consortium has navigated pandemic-related upheavals and adapted the program offering and logistics to try to meet the capacity strengthening needs in Ethiopia and India. The first cohort of trainees has completed their program and this has led to one Wellcome Trust fellowship grant awarded and 3-5 publications in development. The second and third cohorts are current in their orientation prior to visiting the US in August 2022.

Matthew Painschab, MD, Multicentric Castleman disease in Malawi

Grant: K01TW011470; PI: Matthew Painschab; Safety, efficacy, and cost-effectiveness of rituximab for multicentric Castleman disease in Malawi

Country of focus: Malawi

Research website: <https://globalhealth.unc.edu/malawi/cancerprogram/>

Abstract:

Background: In sub-Saharan Africa (SSA), Kaposi sarcoma herpesvirus (KSHV)-related cancers account for 10-35% of malignancies and >10% of cancer-related deaths. Multicentric Castleman disease (MCD) is a life-threatening lymphoproliferative disorder characterized by systemic inflammation, lymphadenopathy, and cytopenias. MCD is strongly associated with KSHV and HIV. KSHV seroprevalence in SSA is >40%, highest of any region in the world; the prevalence of HIV, is, likewise, high. As in studies from high-income countries, our group in Malawi has shown that MCD can be controlled with chemotherapy. However, when chemotherapy is discontinued, rapid relapses occur, with high mortality. Rituximab, an anti-CD20 monoclonal antibody, induces long-term remissions in most patients in small clinical trials in high-income countries. However, rituximab has not been evaluated for MCD in SSA.

Methods: We enrolled MCD patients as part of the Kamuzu Central Hospital Lymphoma Study, a prospective, observational cohort study of lymphoproliferative disorders treated with local standard of care therapy. Starting in June 2020, we began treating patients in a phase II, single arm clinical trial of rituximab for all patients, along with etoposide for patients with high risk disease as defined by a hemoglobin of <8 g/dL or ECOG performance status >2.

Results: To date, we have enrolled 31 MCD patients from 2013-2021; 20 (65%) are men and median age is 41 (range 21-57). Patients have presented with B symptoms (92%), lymphadenopathy (100%) and anemia (median hemoglobin 7.7 g/dL, range 3.7-12.1). Median progression-free survival after treatment with cyclophosphamide, vincristine, and prednisone is 5.5 months. Four patients have been treated under protocol with rituximab to date with no non-hematologic grade >2 adverse events and all remain in complete remission.

Conclusions: MCD is a common lymphoproliferative disorder among HIV-infected individuals in Malawi with a high morbidity and mortality. Early results suggest rituximab treatment for these patients is safe and effective.

Dominique Mortel, MD, Validation of the Modified Rankin Scale for Stroke Clinical Research in Zambia

Title: Johns Hopkins Global Neurology Fellow

Grant Number:1R21NS118543

Grant Contact PI: Mona Bahouth

Grant Title: Understanding Hydration and Stroke Outcomes in Zambia

Country of Focus: Zambia

Abstract:

Introduction: The modified Rankin Scale (mRS) is an important measure of disability after stroke and can be determined using in-person assessments or telephone-based surveys. However, the reliability of the in-person and telephone mRS have not been investigated in Zambia.

Methods: In-person mRS scores were determined for all participants enrolled in a prospective stroke cohort study at the University Teaching Hospital in Lusaka, Zambia by a neurologist or neurology post-graduate trainee. For fifty consecutive participants, admission or discharge mRS was determined by two different clinicians who were blinded to the other clinician's assessment. In addition, the telephone mRS was translated and back translated into Nyanja and Bemba, the two most common local languages in Lusaka. A trained research coordinator called 124 participants less than 72 hours after discharge and administered the telephone mRS. This score was compared to the in-person discharge mRS.

Results: Two in-person mRS scores were equivalent in 84% of cases with a correlation coefficient of 0.9451 ($p < 0.001$) and a kappa coefficient of 0.7636 ($p < 0.001$). Telephone mRS was equivalent to in-person mRS in only 40% ($n=50$) of 124 participants assessed and was 1-point higher than in-person mRS in 39% ($n=48$). Telephone mRS was 1-point lower than in-person mRS in 14% ($n=17$), and differed by 2 points in 7% ($n=9$). The correlation coefficient for telephone and in-person mRS was 0.7743 ($p < 0.001$), but the kappa coefficient indicated fair agreement (0.225, $p < 0.001$). While not significantly different in overall agreement, agreement was highest for telephone mRS interviews conducted in English (46% equal ratings, correlation coefficient 0.7816, kappa 0.2812) and lowest for interviews conducted in Nyanja (29% equal ratings, correlation coefficient 0.6328, kappa 0.0933).

Conclusions: In-person mRS had high inter-rater reliability amongst neurologists in Zambia, but the telephone mRS often resulted in a rating one-point higher than in-person assessment, especially when conducted in Nyanja.

Justen Manasa, HBMLS, MPhil, Ph.D, Enhancing Non-communicable diseases Research and Innovation Capacity in Harare (ENRICH), Zimbabwe

Grant associated with: 1D43TW011968, Justen Manasa, Enhancing Non-communicable diseases Research and Innovation Capacity in Harare (ENRICH), Zimbabwe

Country of Focus: Zimbabwe

Abstract:

Currently there is a dearth of researchers to address priority NCDs in Zimbabwe and sub-Saharan Africa in general. To address this gap this we established the ENRICH program (Enhancing Non-communicable diseases Research and Innovation Capacity in Harare, Zimbabwe) to train a critical mass of Investigators at the UZFMHS to become proficient in NCD research. Research training and capacity building is being conducted in Cardiovascular Diseases, Pulmonary Diseases, Hematology, Stroke and Neurological Diseases, Aging and Dental and Craniofacial Diseases. The long-term goal is to generate evidence for interventions to improve care for people with NCDs in Zimbabwe and sub-Saharan Africa. The objectives of the program are to: 1. To train entry level graduate trainees up to post-Doc trainees to undertake high level research on NCDs in Zimbabwe. 2. Identify high research priority topics across the lifespan in selected NCDs to provide the research scope for the ENRICH program. 3. To establish mentoring relationships between trainees and dedicated and experienced mentors using rigorous selection

criteria. 4. Strengthen research dissemination and knowledge translation to inform policy and practice. The ENRICH program is being implemented by UZFMHS faculty assisted by faculty from regional and international partners i.e. WITS University and University of Colorado Denver respectively. In addition, the program collaborates with other UZFMHS affiliated research centers such as AiBST, UZ-CRC, UZ-CTRC, BRTI among others. The research training in the chosen scientific NCD areas were selected because of the national and institutional importance/interest and the opportunity to address research deficiencies in those areas. The program consists of integrated training framework involving long term degrees (Masters, PhDs, Post-Docs), medium term technical courses and didactic short term courses. These formal training activities are supported by mentorship and mentored projects. In addition, trainees undertake attachments and electives at the affiliated research entities and UCD. The period of training varies with the level of training i.e. 2 years for Masters and Post-Docs and 3 and half years for PhDs. The program will train 8 PhDs, 8 Masters and 4 Post-Docs over a period of 5 years.

Main recent publications:

Zhou DT, Mudhluli TE, Madhombiro M, Nyamhunga A, Matekaire-Chirimo R, Mudzviti T, **Manasa J**, Ma Q, Maponga CC, Morse G (2021). Emerging role for pharmacogenomics in HIV research in Africa. Future Virology Journal. Published online ahead of print (<https://doi.org/10.2217/fvl-2020-0388>)

Mufwambi W, Stingl J, **Masimirembwa C**, **Manasa J**, Nhachi C, Stadler N, Mwila C, Kalungia AC, Mukosha M, Mutiti CS, Kamoto A, Kaonga P, Godman B, Munkombwe D. (2021). Healthcare professionals' knowledge of pharmacogenetics and attitudes towards antimicrobial utilization in Zambia : implications for a precision medicine approach to reducing antimicrobial resistance. Frontiers in Pharmacology: 11. 551522. ISSN 1663-9812

Thistle P, Parpia R, Pain D, **Manasa J**, Lee H, Schnipper LE (2020). Prevalence and subtype distribution of high-risk human papillomavirus (hrHPV) among women presenting for cervical cancer screening at Karanda Mission Hospital (2020). JCO of Global Oncology no. 6: 1276-1281. Published online August 12, 2020.

Zhou DT, Maponga CC, Madhombiro M, Dube A, Mano R, Nyamhunga A, Machingura I, **Manasa J**, Hakim J, Chirenje ZM, Mudzviti T, Nhachich C, Ma Q, DiFransesco R, Masanganise R, and Morse GD. Mentored postdoctoral training in Zimbabwe: A report on a successful collaborative effort. Journal of Public Health in Africa. 2019; 10:1081

Fitzpatrick MB, Dube Mandishora RS, Katzenstein DA, McCarty K, Weber J, Sahoo MK, **Manasa J**, Chirenje ZM, Pinsky BA (2019). hrHPV prevalence and type distribution in rural Zimbabwe: A community-based self-collection study using near-point-of-care GeneXpert HPV testing. International Journal of Infectious Diseases. May;82:21-29.

Wildo Siancas-Villano, Association between Multimorbidity and Cognitive Impairment in the Peruvian Elderly: A Cross-sectional Study in 2012

Grant associated with: D43 TW011601, Lisa De las Fuentes, Research Training: Chronic Non-communicable CVDs and Comorbidities in Peru

Country of focus: Peru

Abstract:

Cognitive impairment (CI) is a clinical condition that impacts the evolutionary development of the elderly, since chronic levels of it would denote a low quality of life and along with it the diagnosis of senile dementia. It is predicted that by the year 2030, the population with senile dementia will be around 78 million in the population of the Americas. In other words, cognitive

impairment, at its critical levels, manifests itself as a prelude to the development of other disabling clinical conditions that reduce physical and mental well-being. However, cognitive impairment can also be aggravated by other clinical factors, such as chronic diseases associated with aging. This results in a greater likelihood that a member of this population sector will present two or more of these clinical manifestations. This would have serious implications in the development of cognitive impairment in this age group in our territory. Therefore, a key factor of the proposed study is to determine the association between Multimorbidity and Cognitive impairment in the Peruvian elderly. For this purpose, participants from eleven regions of Peru and five districts of Lima provinces that participated in the Survey of Health and Well-being of the Elderly (ESBAM) in 2012 will be considered.