showed no effect. Urinary lactulose/mannitol ratio decreased in 1 of the 4 studies, and urinary lactulose percent decreased in 2 studies. DISCUSSION/SIGNIFICANCE: Probiotic supplementation may be remediating an obesity-induced increase in intestinal permeability as evidenced from the effect on serum LPS and mixed sugar solution assays. However, additional studies are needed to further clarify which strain of probiotic bacteria is most effective and the optimal intervention length in subjects with obesity.

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Methods and Perceptions of Success for Patient Recruitment in Decentralized Clinical Trials**

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OBJECTIVES/GOALS: Patient recruitment, enrollment, and retention continues to be one of the leading barriers to successful clinical trials, and results do not always reflect the diversity of the general population. This systematic review aims to assess the impact of decentralized methods on recruitment, retention, and diversity on recent clinical research. METHODS/STUDY POPULATION: A systematic search of the literature, using databases such as PubMed, Cochrane Library and EMBASE to find publications reporting on the aspect of recruitment in decentralized clinical trials was performed. The titles and abstracts of the publications were assessed, excluded those lacking sufficient or pertinent information regarding decentralization in clinical trials. The remaining publications were reviewed for those reporting sufficient data regarding the impact of decentralization on the aspect of recruitment in clinical trials to be included in the focused analysis. Studies reporting on participant retention and diversity in addition to recruitment were emphasized. RESULTS/ANTICIPATED RESULTS: This systematic search returned 13 studies highlighting the role of decentralized clinical trial methods impacting participant recruitment, retention, and diversity in clinical trials. Out of the 13 studies, 10 reported improved recruitment using virtual or decentralized methods, and 7 of these reported improvements when compared alongside with traditional methods. 7 studies reported a positive impact on participant retention, with 4 of these directly comparing decentralized methods with traditional methods. Lastly, of these studies, 5 were reported to have trended towards diversity in the demographics of the sample population, including race or geographic location. DISCUSSION/SIGNIFICANCE: Related reviews have stated a lack of published comparable data to determine if DCTs (Decentralized Clinical Trials) improved recruitment and retention. Results suggest this review addresses such a gap, by providing data on how decentralized methods can benefit recruitment and retention, potentially highlighting a new standard.

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METHODS FOR IDENTIFYING FILIPINO GENDER MINORITIES AND MENTAL HEALTH RISKS IN ELECTRONIC HEALTH RECORDS

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OBJECTIVES/GOALS: Aim 1: To explore methodologies to identify gender minorities, and Filipinos, separately, in an electronic health record system. Aim 2: To characterize the similarities and differences in demographic, socioeconomic, and mental health of Filipinos gender minorities compared to Native Hawaiian Pacific Islanders, and White/ European Americans. METHODS/STUDY POPULATION: This study was approved by the University of Hawaii Institutional Review Board. Cross-sectional retrospective data were obtained from a collaborative community clinic's electronic health record system. Patients were age 18 and older with a clinical diagnosis for gender dysphoria and from Native Hawaiian Pacific Islander, White/ European American, and Filipino backgrounds. RESULTS/ANTICIPATED RESULTS: Preliminary data revealed that 11% of the clinical population were diagnosed with gender dysphoria (N=373) with 57.6% (n=215) who met the inclusion criteria with complete health registration forms. Patients were from Filipino (21.8%), Native Hawaiian Pacific Islander (23.3%), White/ European American (31.6%), and multiethnic (23.3%) backgrounds. Most patients reported mental health (e.g., depression) conditions (50.6%-64.7%). Further statistical analyses will reveal if Filipinos have higher or lower levels of anxiety, depression, and suicide risks than Native Hawaiian Pacific Islander, and White/ European American gender minority individuals. DISCUSSION/SIGNIFICANCE: In Hawaii, one person dies by suicide every two days; suicide is the lead cause of fatal injuries. Study findings can inform future methodology studies to identify gender minorities and develop culturally relevant gender affirming mental health programs for gender minorities.

**Brian Miyata has been added as an author. An addendum detailing this update has also been published (doi:10.1017/cts.2023.593).

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Pharos: A Novel Mapping Software to Identify Cell Network Signal Strength for Mobile Health Epidemiology

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OBJECTIVES/GOALS: The aim of this study was to design and implement the Pharos application to map the cellular network support structure around Lake Victoria in Western Kenya. Additionally, the Pharos app was used to collect images of disease-relevant vector and plant life surrounding the study sites to train a computer vision algorithm to map disease-relevant areas. METHODS/STUDY POPULATION: Pharos was provided to a 4-person team of healthcare workers. The app was pre-loaded on both iOS and Android devices to be used during the course of normal field activity. Pharos ambiently collects network data and the team was asked to capture images of landmarks relevant to their work in schistosomiasis control. The field team traveled to 4 counties of differing schistosomiasis risk surrounding Kisumu, Kenya in autumn 2022 and will return to these areas in early spring 2023. Cell signal indicators (upload and download speed) were collected and asynchronously uploaded to a database for further analysis. Additionally, all landmark images (cell network towers, landmarks (e.g. schools, churches, public centers), plant life, vectors, and water bodies) were recorded and tagged with GPS coordinates and time stamps. RESULTS/ANTICIPATED RESULTS: Iterative development powered by small, informal, user-centered focus group discussions with the field team led to several key adaptations to the Pharos software. On the first deployment, 1,297 unique upload and download events were recorded across 3 Kenyan cell providers and 1 American provider. 1,197 data points were collected in Kenya using both Android and iOS devices using several versions of the Pharos application. 154 unique landmarks were photographed, but a distinct difference in landmark recording was observed between devices, prompting a transition to iOS-only data collection. Of the landmarks recorded, the majority (120, 77.9%) were landmarks or cell network towers, while 22.1% were water bodies, plant

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life, or schistosomiasis vectors. DISCUSSION/SIGNIFICANCE: For the first time, high-detail maps of cellular signal and critical schistosomiasis-related landmarks were generated. Future work on this project is focused on training computer vision algorithms using the captured images of environmental and ecological factors to isolate possible areas of human disease transmission.

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Role of Neurocritical Care Physicians in Traumatic Brain Injury Systems of Care and Research: Perspectives from Provider Surveys

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OBJECTIVES/GOALS: The purpose of this small survey-based study was to characterize the current role of neurocritical care physicians in traumatic brain injury (TBI) systems of care and research. In doing so, we aim to highlight potential roles of neurology providers in the medical management and enhancement of translational science in the field of TBI. METHODS/STUDY POPULATION: Between April and June 2021, a web-based survey was disseminated by email to members of the Neurocritical Care Society. The survey was open to all physician providers. A total of 36 surveys were completed. The survey consisted of 18 questions with pre-defined answer choices. Survey questions aimed to determine areas of practice, primary clinical specialty, hospital practice setting, provider involvement in TBI care, provider involvement in TBI research, and current research roles. RESULTS/ANTICIPATED RESULTS: 92% of survey respondents were in the United States (n=33), representing all national regions. 75% of the physicians were neurocritical care trained (n=27). 69% of providers were practicing in academic institutions while 78% were at sites designated as Level I trauma centers. All respondents managed acute TBI, but 50% served as consultants rather than being the primary service provider. At their sites of practice, 31% of patients were on non-neuroscience services, especially those with non-neurologic traumatic injury. Only 36% reported that TBI protocols were written and adhered to at their site. Only 44% reported that TBI research was performed at their site, while 50% had interest in participating in TBI research. TBI was the primary area of research for 17% of physicians. DISCUSSION/SIGNIFICANCE: This small physician survey highlights heterogeneity in TBI systems-based practice and research roles. Areas of potential improvement include greater involvement of neurocritical care physicians in TBI management, protocol-building and implementation, and TBI research. Reasons for current barriers are multifactorial and will be discussed.

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The Need for a Clinical and Translational Science Framework to Bridge Environmental Contamination Data and Male Reproductive Health

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OBJECTIVES/GOALS: Although there is ample evidence that environmental contaminants impact reproductive health, the exact mechanisms of action, for the most part, remains unclear. We sought to determine whether known contaminants in Puerto Rico can contribute to the selection of a bioassay to add granularity to geospatial contamination data at the cellular level. METHODS/STUDY POPULATION: A PubMed literature search was conducted: Puerto Rico AND Vieques AND Environmental Contaminants AND Heavy Metals OR Phthalates OR Metals OR PCB OR Air Pollution OR CVOC . Additional inclusion criteria were free full text, English language and year of publication between 2000 to 2022 (n = 244 studies). References that were not related to Puerto Rico and environmental contaminants in air, soil, water, or vegetation were excluded. A second PubMed literature search was conducted to determine whether a clinical link has been established between contaminant exposure and the male reproductive system. Search terms were: heavy metals AND hypospadias OR cryptorchidism NOT female NOT animal NOT review , heavy metals AND male infertility NOT female NOT animal NOT review . The same strategy was used for phthalates. RESULTS/ANTICIPATED RESULTS: We found that 12 out of 15 studies that were conducted in the Archipelago of Puerto Rico between 2000-2022 reported heavy metals- and/or phthalates-contamination in soil and water. We also found that there is a paucity of clinical studies that consider plausible relationships between a given contaminant and congenital conditions or male reproductive function. Specifically, we found that heavy metal exposure has been linked to hypospadias (n=1 study), comorbidity of hypospadias plus cryptorchidism (n= 1 study) or male infertility (n=14 studies). Phthalates exposure has been linked to comorbidity of hypospadias and cryptorchidism (n=1 study) or male infertility (n=1 study). Male subfertility has been overlooked so far. We noted that Sertoli cell dysfunction has been linked to all of these conditions. DISCUSSION/SIGNIFICANCE: The geography of Puerto Rico provides an opportunity to close the gap in knowledge between environmental contamination and male reproductive health. Based on our findings, we propose that the use of a bioassay with an immortalized Sertoli cell line can uncover the cellular processes that may be affected in male reproduction upon contaminant exposure.

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The Social Responsibility of Translational Science

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OBJECTIVES/GOALS: Recent NCATS funding announcements emphasize pursuing domain-agnostic translational science projects that seek to transform the system of science. We aimed to articulate the social responsibility of translational science, defined as prioritizing improved health outcomes and decreased disparities. METHODS/STUDY POPULATION: We focused on the framing of social responsibilities of translational science and distinctions between (a) domain-agnostic translational science that aims to transform the system of science and (b) translational research that takes place within a specific therapeutic area. We reviewed CTSA funding calls, translational research ethics papers, and statements by leaders in the field of translational science. We integrated the social responsibilities of improving health outcomes and decreasing disparities with the values of translational science, which prioritize the relevance, usability, and sustainability of translational interventions. RESULTS/ANTICIPATED RESULTS: We drew on our review of the literature and case studies to offer guidance aimed at helping to ensure that differently positioned actors and entities within the translational ecology can advance the values of translational science while also fulfilling the social responsibilities of translational science. We specify how (a) Funders and policymaking institutions, (b) Organizations such as

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