discrimination in healthcare settings compared to their straight counterparts. Our results underscore the urgent need to foster respectful, inclusive healthcare environments and ensure that healthcare providers are adequately trained to address the unique health needs and experiences of SMPs.

97

Neighborhood level stressors, resilience sources, and other characteristics among sexual minority groups

CHEN ZHANG, Wonkyung Chang, Yu Liu, Yu Yang and Cait Dreisbach
University of Rochester

OBJECTIVES/GOALS: Sexual minority populations (SMPs), including lesbian, gay, and bisexual groups, disproportionately encounter discriminatory experiences due to bi/homonegativity and systemic inequities across various social domains. We aim to understand how the neighborhood-level stressors and resilience sources differed across specific groups in SMPs. METHODS/STUDY POPULATION: Utilizing the NIH All of Us' cloud-based platform, we selected cohorts self-identifying as gay (n = 9,454), bisexual (n = 15,284), lesbian (n = 5267), or straight (n = 349,748). We explored multiple key measures of neighborhood-level stressors (e.g., neighborhood disorder, neighborhood cohesion, and environment index) and resilience sources (e.g., neighbor cohesion, social support), and other factors (e.g., food insecurity, housing insecurity, and housing instability) by their sexual orientations using analysis of variance or Chi-square analyses. RESULTS/ANTICIPATED RESULTS: Our sample comprised 60.8% females and 37.5% males identifying as non-binary or transgender, with an average age of 55.6 years (SD = 17.1). The racial composition was 56.0% White, 19.4% Black, 18.7% Hispanic, and 5.9% others (e.g., Asian, multiracial). Compared to straight individuals, SMPs reported high neighborhood stressors (e.g., disorder, worse environment) but lower neighborhood-level resilience sources (e.g., social support, cohesion). In addition, bisexual groups reported highest prevalence of housing insecurity (6.7% vs. 2.3%), housing instability (36.0% vs. 19.6%), and food insecurity (26.57% vs. 12.21%). DISCUSSION/SIGNIFICANCE OF IMPACT: SMPs, particularly bisexual individuals, face greater neighborhood stressors and fewer resilience sources than their straight counterparts. These findings call for targeted interventions to address these disparities and promote health equity, using large-scale datasets to inform community-based solutions.

99

Investigating BMI-driven variations in cancer immunotherapy treatment effect: An individual patient data meta-analysis (2013–2023)

Pratik Reddy
Tufts University

OBJECTIVES/GOALS: This study looks to investigate the relationship between body mass index (BMI) and the treatment effect of cancer immunotherapies. Specifically, we will assess whether there is a significant difference in survival curves associated with varying BMI levels and track trends in BMI reporting over the last decade. METHODS/STUDY POPULATION: An individual patient meta-analysis will be conducted by reanalyzing raw data of phase 3 cancer immunotherapy trials (2013–2023) accessed via the database Vivli. Prior to making a formal data request, an exploratory search will be first done through clinicaltrials.gov to assess viability. Studies that report baseline BMI and treatment efficacy will be included. BMI will be analyzed as a continuous variable, with survival curves compared across different BMI ranges using restricted mean survival time and log-rank tests. Trials will be stratified by drug class and adjusted for race, age, and gender to account for potential sources of confounding/bias. RESULTS/ANTICIPATED RESULTS: Results are currently still a work in progress as I am in the process of getting the dataset from Vivli. I anticipate that treatment effects in cancer immunotherapies will vary significantly by BMI. Furthermore, I expect to see significant disparities in survival outcomes between patients assigned to a low and high BMI category. Lastly, trends in the reporting of BMI across immunotherapy trials are expected to be inconsistent which highlights the need for more standardization in clinical trial datasets. DISCUSSION/SIGNIFICANCE OF IMPACT: This study should address critical knowledge gaps in how BMI level is associated with immunotherapy outcomes. These findings could potentially guide personalized treatment strategies and highlight the importance of standardizing the variables clinical trials chose to report.

100

Prevalence of complete sample size justifications in recent publications in top clinical neurology journals

Sreeja Gadepalli and Olivia Hogue
Cleveland Clinic Foundation

OBJECTIVES/GOALS: This study examines prevalence of complete sample size justifications in publications in the top five clinical neurology journals. Secondary goals include comparing study designs and clinical populations to explore whether some may be more likely to include inadequate sample size considerations. METHODS/STUDY POPULATION: Recent studies (n = 125) in *Lancet Neurology*, *Alzheimer's and Dementia*, *JAMA Neurology*, *Acta Neuropathology*, and *Brain* will be evaluated. For each journal, the 25 most recent empirical articles between 2022 and 2023 will be examined for their inclusion of a justification and reproducible sample size calculation. Inclusion of components of an ideal sample size justification will be evaluated: effect size to be detected (standardized or unstandardized), alpha, power, and from where values were derived. Prevalence and completeness will be compared among study designs, clinical populations, and with regard to journal reporting requirements. RESULTS/ANTICIPATED RESULTS: At the pilot review stage, 17 of 25 included studies had any kind of sample size justification, and only 3 studies had enough information to reproduce their sample size calculations. Retrospective studies included a sample size justification more frequently (81.8% vs. 57.1%), but prospective studies had more complete sample size justifications, when present. We hypothesize that sample size calculations will be more complete in reports of clinical trials and prospective cohort studies, compared to retrospective and cross-sectional designs. Based on our previous research, we do not expect that journal reporting requirements will affect completeness of sample size justifications. DISCUSSION/SIGNIFICANCE OF IMPACT: Translational decision-making is informed in part by the robustness of current

Downloaded from https://www.cambridge.org/core. IP address: 3.17.60.86, on 23 Apr 2025 at 20:54:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms.
https://doi.org/10.1017/cts.2024.771

research. Transparency of sample size considerations in publications can contribute to the formation of less biased opinions of translational readiness and, subsequently, more efficient and effective translation.

103 Examining the link between prenatal lead exposure and hypospadias rates in Puerto Rican boys: An observational study

Eric Miranda-Valentín[1] and Luis Mojica-Pérez[2]
[1]Department of Internal Medicine, Medicine School, Medical Sciences Campus, University of Puerto Rico, San Juan, PR 00936, USA and [2]ChEMTox Biotesting Facility, Ana G. Mendez University, Cupey Campus, San Juan, PR 00926, USA

OBJECTIVES/GOALS: Male urogenital tract development is influenced by hormonal signals, which may be disrupted by endocrine-disrupting chemicals like lead. This observational study investigates the potential link between lead exposure and hypospadias rates in Puerto Rican boys, focusing on regional hotspots of hypospadias. METHODS/STUDY POPULATION: Lead levels from water plants across Puerto Rico were analyzed using PR Aqueduct and Sewer Authority water quality certificates. Hypospadias rates in seven health regions were obtained from the Puerto Rico Department of Health's Birth Defects Prevention and Surveillance System. Data were from Puerto Rican boys born to women aged 15 years or older from 2017 to 2022. Rates were calculated using 2020 Census data, and statistical analyses were conducted using Intellectus. RESULTS/ANTICIPATED RESULTS: Significant differences in hypospadias rates and lead levels were found across health regions, with the highest rates observed in Bayamón and Arecibo (5 cases per-100,000 births). Bayamón had the highest average lead concentration (14.33 ppb). A Kruskal–Wallis test showed significant regional variation in lead levels ($\chi^2(6) = 16.82$, $p = 0.010$) and hypospadias rates ($\chi^2(6) = 16.53$, $p = 0.011$). Post hoc analyses revealed key differences between regions, notably Bayamón and Metro. DISCUSSION/SIGNIFICANCE OF IMPACT: These findings suggest a potential spatial link between prenatal lead exposure and hypospadias risk, underscoring the need for targeted public health interventions. Future studies will explore anti-Müllerian hormone expression in lead-exposed Sertoli cells to better understand the biological mechanisms behind these patterns.

104 Using noninvasive bioaerosol sampling to characterize human-to-human transmission of influenza virus in a controlled exposure setting

Kristen K. Coleman[1], Jianyu Lai[1], S.-H. Sheldon Tai[1], Filbert Hong[1], Isabel Sierra Maldonado[1], Yi Esparza[1], Kate McPhaul[1], Petri Kalliomäki[1], Jonathan Vyskocil[1], Anna Pulley[1], Hamed Sobhani[2], Shengwei Zhu[2], Jelena Srebric[2], Don DeVoe[2], Wilbur H. Chen[3], Benjamin J. Cowling[4], Juan Manuel Carreno[5], Florian Krammer[5], Gabriele Neumann[6], Yoshihiro Kawaoka[6], Aubree Gordon[7], Donald K. Milton[1] and Kristen Coleman[8]
[1]Department of Global, Environmental, and Occupational Health, School of Public Health, University of Maryland, College Park, USA; [2]Department of Mechanical Engineering, University of Maryland, College Park, USA; [3]University of Maryland, Baltimore, USA; [4]The University of Hong Kong, Hong Kong Special Administrative Region, China; [5]Icahn School of Medicine at Mount Sinai, NY, USA; [6]University of Wisconsin, Madison, WI, USA; [7]University of Michigan, Ann Arbor, MI, USA and [8]University of Maryland

OBJECTIVES/GOALS: Mathematical models of airborne virus transmission lack supporting field and clinical data such as viral aerosol emission rates and airborne infectious doses. Here, we aim to measure inhalation exposure to influenza aerosols in a room shared with persons with community-acquired influenza and estimate the infectious dose via inhalation. METHODS/STUDY POPULATION: We recruited healthy volunteer recipients and influenza donors with polymerase chain reaction (PCR)-confirmed community-acquired infection. On admission to a hotel quarantine, recipients provided sera to determine baseline immunity to influenza virus, and donor infections were confirmed by quantitative real-time polymerase chain reaction. Donors and recipients were housed in separate rooms and interacted in an "event room" with controlled ventilation (0.2 – 0.5 air changes/hour) and relative humidity (20–40%). We collected ambient bioaerosol exposure samples using NIOSH BC-251 samplers. Donors provided exhaled breath samples collected by a Gesundheit-II (G-II). We analyzed aerosol samples using dPCR and fluorescent focus assays for influenza A and sera by hemagglutinin inhibition assay (HAI) against donor viruses and vaccine strains. RESULTS/ANTICIPATED RESULTS: Among two cohorts (24b and 24c), we exposed 11 recipients (mean age: 36; 55% female) to 5 donors (mean age: 21; 80% female) infected with influenza A H1N1 or H3N2. Eight G-II and two NIOSH bioaerosol samples (1–4 μm and ≥4 μm) were PCR positive. We cultured virus from one G-II sample. Based on previous literature, we hypothesized that ~50% of immunologically naïve people (HAI DISCUSSION/SIGNIFICANCE OF IMPACT: We demonstrated that it is feasible to recruit donors with community-acquired influenza and expose recipients to measurable virus quantities under controlled conditions. However, baseline immunity was high among volunteers. Our work sets the stage for designing studies with increased sample sizes comprising immunologically naïve volunteers.

105 Risk factors for hypokalemia in adults in Bangladesh

Siam Muquit and Lawrence Appel
Johns Hopkins University

OBJECTIVES/GOALS: A sample of 1,073 hypertensive adults in Bangladesh showed unusually high rates of hypokalemia. We analyzed sociodemographic and clinical factors – including age, sex, weight, body mass index, blood pressure, creatinine clearance, and urine protein concentration – to identify key predictors of hypokalemia. METHODS/STUDY POPULATION: A cross-sectional analysis was conducted on 1,073 hypertensive adults from the OK study in Dhaka, Bangladesh (2022–2023). Hypertension was defined as blood pressure >140/90 mmHg, and none of the participants were on any antihypertensive medication prior to the study. Hypokalemia was defined as serum potassium RESULTS/ANTICIPATED RESULTS: The prevalence of hypokalemia was 21.5%. In univariate analysis, age (OR 0.975, 95% CI [0.959, 0.990], $p = 0.00189$), systolic blood pressure (OR 1.02, 95% CI [1.00, 1.03], $p = 0.00568$) and diastolic blood pressure (OR 1.03, 95% CI [1.01, 1.04], $p = 0.000272$)

Downloaded from https://www.cambridge.org/core. IP address: 3.17.60.86, on 23 Apr 2025 at 20:54:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms.
https://doi.org/10.1017/cts.2024.771