

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

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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

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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 $\geq 4 \mu\text{m}$) 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

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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], $p = 0.000272$)