Conclusion: Among a nationally representative sample of U.S. adolescents, we found a dose-response association between VOC and cardiometabolic dysfunction. This association was driven by high poverty areas, no association was observed in low poverty areas.

Infectious Disease

Association of neighborhood characteristics with pertussis diagnosis in a retrospective cohort of children born in Philadelphia, Pennsylvania

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Purpose: For decades, Hispanic/Latino infants have experienced higher rates of pertussis than infants from other racial/ethnic groups, yet evidence to explain this disparity is inconclusive. Sociodemographic disparities in pertussis vaccination coverage and delay have also been recognized. Understanding contextual risk factors may provide insights into the mechanisms underlying observed disparities. We investigate neighborhood-level, individual-level, and cross-level effects on disease risk to optimize immunization program outreach. We hypothesize that neighborhood-level characteristics will be associated with pertussis diagnosis.
Methods: A retrospective cohort study of children born January 1, 2010-December 31, 2017 was conducted to evaluate the association between neighborhood disadvantage score and percent Hispanic/Latino residents, and the dependent variable of pertussis diagnosis. We utilized generalized estimating equations accounting for correlated neighborhood-level errors to estimate the adjusted odds of pertussis. Covariates included child, maternal, and neighborhood characteristics. We evaluated pre-specified neighborhood- by individual-level interactions.
Results: Among 174,986 children, there were 235 pertussis cases. We detected an association between neighborhood disadvantage and pertussis in bivariable models (OR=1.15; 95% CI 1.01-1.30), but we did not observe an association in multivariable models adjusting for child and maternal sociodemographic characteristics and child vaccination status (aOR=0.83; 95% CI 0.59-1.17). We did not detect an association between neighborhood-level percent Hispanic/Latino residents and pertussis (OR=1.00; 95% CI 0.99-1.01), nor did we observe cross-level interactions.
Conclusion: Child and maternal characteristics were the primary drivers of pertussis in our cohort, suggesting neighborhood characteristics are not predictive of disease. Future work should continue to investigate the Hispanic/Latino disparity to inform immunization program planning.

Real world incidence estimation methodologies used for surveillance of HIV in repeat blood donors

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Purpose: Retrospective incidence estimates (IR) for transfusion-transmitted infections (TTI) in repeat blood donors is a standard method to assess safety of the blood supply and often influences policy decisions. These rates should be comparable across jurisdictions, but epidemiologists within the blood community have adapted traditional IR calculation methods in multiple ways to address challenges of measuring IR where there is no control over the time of donor presentations. Caution must be taken when comparing study results if different IR methods were used. Here we evaluate HIV IR using two common methods.
Methods: In the "Conventional" method (CM), a donor contributes to person-time if at least two blood donations exist within a specified estimation interval (EI). With the "Extended Lookback" method (ELM), the history of each repeat donor is traced back the same length of time as the EI to look for prior negative donations; their previous negative can occur before the EI.
Results: While ELM captures more incident donors than CM (n=398 versus n=225) during this 12-year study, we see no appreciable differences in IR between the two Methods.
Both show a significant decreasing trend in HIV IR (CM: R^2=0.85, p=0.01; ELM: R^2=0.74, p=0.03).
Conclusions: Estimating TTI incidence in blood donor populations is uniquely challenging. Though the estimates from these two methods were approximately equal, there are other methods in use. When choosing a preferred method, it is important to apply various methods to real data to identify possible bias that may influence real-world policy.

The effect of neighborhood concentrated disadvantage on the association between hospital-associated infections and survival in people living with HIV

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Purpose: Louisiana has an overwhelmingly large number of neighborhoods with high concentrated disadvantage (CDI), which may be affecting the number of hospital-associated infections (HAIs) and the mortality among people living with HIV (PLWH). This study aimed to determine the association between HAIs and mortality in PLWH while considering the potential confounding effects of neighborhood CDI.
Methods: This retrospective cohort study used the 7,207 records of the PLWH patients in the Louisiana Hospital Inpatient Discharge Database (LAHIDD) from 2011-2015. The main exposure was diagnosis with a HAI during their hospital stay, the main confounder of interest was neighborhood CDI and the main outcome was vital status by the end of the study period. The data was analyzed using generalized linear mixed models with a binary distribution and a random intercept, Cox proportional hazards mixed models, and geographically weighted least squares regressions.
Results: Results of the any-cause of death model showed that the factor most strongly associated with death was having a comorbidity (OR=4.51; CI:3.14, 6.49). The cause of death model predicting HIV-associated mortality indicated that CDI displays a stronger and significant effect on HIV-associated mortality (OR=1.18; CI:1.05, 1.33). The spatial mapping indicated that a greater number of deaths were occurring in census tracts with higher levels of disadvantage. The spatial regressions showed that an increase in HAIs results in a significant increase in deaths in any given census tract (0.83; CI:0.45, 1.20).
Conclusions: Although HAIs are not statistically significant in the mixed models, higher CDI is significantly associated with HIV-associated mortality.

Patterns of consistent retention in HIV care and viral suppression among cis-gender women living with HIV in Florida, 2014-2017: a latent class analysis

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Purpose: The objective was to identify patterns of consistent retention in HIV care and viral suppression among women newly diagnosed with HIV and factors associated with these patterns.
Methods: Surveillance data from the Florida Department of Health's electronic HIV/AIDS Reporting System on women diagnosed with HIV in 2014 and living in Florida through 2017, were retrospectively analyzed. Latent class analysis was used to classify women by patterns of change in retention in HIV care (greater than or equal to 2 HIV care visits at least 3 months apart) and viral suppression (less than or equal to 200 copies/ml) over three years. Mutlinominal regression was used to examine factors associated with class memberships.
Results: Data from 809 women were analyzed. Four classes were selected based on model fit parameters: (Class 1) consistently retained and suppressed (greater than 90% probability of being retained and suppressed), (Class 2) not consistently retained or suppressed (less than 20% probability of