

standard approach under the scenarios in our simulations in terms of gaining higher power. In practice, we expect that SCWR can better detect the treatment effects. Finally, we will offer convenient software tools and clear tutorials for implementing the SCWR method in future studies, which include both unstratified and stratified designs. **DISCUSSION/SIGNIFICANCE:** The developed SCWR provides a more flexible way of combining the top layer and subsequent layers (e.g., the fatal and non-fatal endpoints) under the hierarchical structure and achieves a higher power in simulation. This nonparametric approach can accommodate different types of outcomes, including time-to-event, continuous, and categorical ones.

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### Spatial variation in the effect of heat waves on pediatric acute care utilization in California (2000-2019)

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**OBJECTIVES/GOALS:** The increasing frequency and severity of heat waves due to climate change present unique risks to children. We aim to assess how various heat wave definitions impact pediatric acute care utilization across California. We also hope to examine heat waves' localized effects at the zip code level and how contextual factors modulate these effects. **METHODS/STUDY POPULATION:** A time-stratified case crossover will evaluate the association between different heat wave definitions and pediatric acute care utilization throughout California. A within-community matched design analysis coupled with a bayesian model will examine heat waves' effects at the zip code level. A random effect meta-regression will determine which contextual factors modulate heat waves' impact on different zip codes. Temperature data will be pulled from Cal-Adapt and interpolated to each zip code population centroid. Data for all unscheduled pediatric hospitalizations and ED visits for selected ICD codes in California from 2000–2019 will be obtained from the California Department of Health Care Access and Information. Contextual factors will be sourced from the US Census and the Healthy Places Index. **RESULTS/ANTICIPATED RESULTS:** We anticipate that heat waves will be associated with increased pediatric acute care utilization throughout California for select ICD codes. At the zip code level, we anticipate that there will be considerable spatial variation in the association between heat waves and care utilization based on region and zip code characteristics. Furthermore, we expect to see significant variation in the association between heat waves and hospitalizations based on the selected heat wave definition. We predict that zip codes with the highest increases in care utilization will have higher percentages of non-white residents, lower socioeconomic status, and fewer heat protective factors like park density and tree coverage. **DISCUSSION/SIGNIFICANCE:** As global temperatures continue to rise, children will be increasingly susceptible to health consequences associated with heat exposure. Understanding which pediatric populations are most vulnerable during heat waves is critical for designing policies and interventions that protect the most vulnerable communities.

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### Syphilis Incidence Following an STI Diagnosis Among Cisgender Women in Baltimore, MD, from 2009-2021

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**OBJECTIVES/GOALS:** The primary objective of this study is to evaluate the risk of an early syphilis diagnosis following a chlamydia, gonorrhea, or HIV diagnosis, and to determine differences by race, repeat infection, diagnosing provider and STI/HIV risk behavior among cisgender women in Baltimore, MD. **METHODS/STUDY POPULATION:** Public health surveillance data from 2009-2021 was used to examine the overall incidence of syphilis infections among cisgender women ages 13-50 diagnosed with a reportable STI (chlamydia, gonorrhea, or HIV) and the percentage of total infections that were early infections (primary, secondary, or early latent syphilis) in Baltimore City. Data were collected on age, race, diagnosing location (i.e., STI clinic, private provider, etc.), preceding STI diagnoses, and sexual risk behaviors. STI-specific cumulative incidence and incidence rate ratios were used to compare syphilis diagnoses among Black vs. white women, women with repeat STI diagnoses vs. one STI diagnosis, women diagnosed at a public vs. private clinic, and commercial sex workers and substance users vs. those not reporting these risk behaviors. **RESULTS/ANTICIPATED RESULTS:** Based on recent surveillance data, we expect approximately 79,000 chlamydia, gonorrhea, and HIV diagnoses among cisgender women between 2009-2021. We hypothesize that 3% of chlamydia, gonorrhea, and HIV diagnoses among cisgender women will be followed by a syphilis diagnosis within the study period. Extrapolating from previous studies of early syphilis in men who have sex with men in Baltimore, we expect the rate of syphilis diagnosis following STI diagnosis will be higher in Black vs. white women, women with a prior gonorrhea or HIV diagnosis vs. chlamydia diagnosis, women with repeat STI diagnoses vs. one STI diagnosis, women diagnosed at public STI clinics vs. those diagnosed by private providers, and women reporting commercial sex work and/or substance use vs. those not reporting these risk behaviors. **DISCUSSION/SIGNIFICANCE:** Local healthcare providers should offer syphilis screening to any woman diagnosed with a chlamydia, gonorrhea, or HIV infection. The higher rates of early syphilis diagnosis among women with repeat STI diagnoses or a prior gonorrhea or HIV diagnosis suggests regular screening is critical in these populations.