

within 30 min of HRVMs; mean cumulative functions rose more slowly near HRVMs. The selected Andersen–Gill gap-time model found no meaningful short-term effect of proximity (aHR $\approx$ 1.03, 95% CI 1.00–1.06). Younger age and public or commercial locations predicted faster recurrence. County ITS suggested stabilization after HRVM expansion without a clear early reduction. DISCUSSION/SIGNIFICANCE OF IMPACT: Early HRVM rollout yields small reductions in cumulative recurrence without a meaningful short-term hazard change. Results support MOUD linkage and mobile outreach targeting younger people and public settings. The recurrent-event and ITS framework is generalizable for sitting and monitoring.

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Environmental survival and inactivation by ultraviolet light of avian and human metapneumoviruses

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OBJECTIVES/GOALS: Quantify environmental persistence and airborne stability of avian (aMPV) and human metapneumovirus (hMPV) and evaluate far-UVC light (at 222 nm) as a safe, non-chemical disinfection method to reduce viral transmission in agricultural and healthcare environments. METHODS/STUDY POPULATION: Subtypes A and B of aMPV and subtype B of hMPV isolates will be propagated in Vero and LLC-MK2 cells, respectively. Viral persistence will be quantified on fomites under varying temperature and humidity. Aerosol stability will be assessed using an environmental chamber and an atomizer system. Once baseline survival is established, samples and aerosols will be exposed to different far-UVC doses, intensities, and durations. The endpoints will be determined by observing cytopathic effects (CPE), virus titers will be calculated by the Karber method, and titers will be expressed as TCID₅₀. RESULTS/ANTICIPATED RESULTS: We anticipate quantifying surface and aerosol stability profiles of aMPV and hMPV across several porous and non-porous materials (fomites) and environmental conditions relevant to poultry and clinical settings. Far-UVC exposure is predicted to achieve rapid viral inactivation on non-porous surfaces and in aerosols without measurable cytotoxicity or material degradation. The findings will establish disinfection thresholds and demonstrate the practicality of far-UVC integration into real-world agricultural and healthcare biosecurity systems. DISCUSSION/SIGNIFICANCE OF IMPACT: This work advances One Health biosecurity by establishing safe far-UVC disinfection protocols to control the spread of both aMPV and hMPV. Findings will inform infection control policies and reduce economic and health burdens in poultry operations and vulnerable human populations.

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Mass incarceration spillover effects: Exploring neighborhood premature mortality through demographic subgroups and spatial relationships

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OBJECTIVES/GOALS: Mass incarceration, i.e., extremely high rates of incarceration concentrated in impoverished racially segregated communities, is associated with poor neighborhood health, but it is unclear if this is due solely to formerly incarcerated individuals. We examine these population health effects through neighborhood premature mortality rates. METHODS/STUDY POPULATION: We calculated census tract-level overall, gender-, and race-specific age-adjusted premature mortality rates using mortality data (2010–2014) from the New York City Department of Health. We excluded tracts with subgroup population <800. Exposure was the NY State imprisonment rate (2010), modeled as quintiles. As covariates, we included % non-Hispanic Black; poverty, education, and violent crime rates; and population density. We used GLM regression models with the census tract as the unit of analysis. To test if spatial clustering of incarceration (i.e., high-incarceration census tracts surrounded by high-incarceration census tracts) was associated with premature mortality rate independent of covariates and tract incarceration rate, we used LISA cluster values and proximity to high-high clusters. RESULTS/ANTICIPATED RESULTS: Across 1985 tracts, incarceration rate ranged from a median of 19 (quintile 1) to 698 (quintile 5) per 100,000 people. In unadjusted models, neighborhoods in Q5 of incarceration rate had 2.4x higher rate ratios of premature mortality versus Q1. In fully adjusted models, Q5 tracts had 62% higher rate ratios (aOR 1.62, 95% CI 1.50–1.75; $P < 0.001$), sex-specific findings were similar for males and females, Black and Hispanic (aOR 1.36; 95% CI 1.04–1.78 and aOR 1.49, 95% CI 1.24–1.79, specifically) rate ratios were both $P < 0.001$ but Asian and White were NS. Being in a high-high cluster was significantly associated with premature mortality independent of covariates and tract incarceration rate (aOR 1.13, 95% CI 1.06–1.20), whereas low-low clusters were protective (aOR 0.90, 95% CI 0.85–0.94), both $P < 0.001$. DISCUSSION/SIGNIFICANCE OF IMPACT: Premature mortality rates are substantially higher in high-incarceration neighborhoods even accounting for confounders. Sex-specific findings suggest spillover to never-incarcerated people, and race-specific findings suggest concentration in social networks of the incarcerated. Spatial analyses suggest true neighborhood-level effects.

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Linking vasomotor symptom severity to physiological health in peri/menopausal women: The role of hormone therapy in menopause treatment

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OBJECTIVES/GOALS: In peri- and postmenopausal women, to determine 1) whether vasomotor symptoms (VMS) reflect underlying vascular and skeletal muscle dysfunction as well as cardiorespiratory fitness (CRF) and 2) to assess the impact of hormone replacement therapy (HRT) on VMS, vascular and muscular function, and CRF. METHODS/STUDY POPULATION: Peri- and postmenopausal women with 1) no/mild, 2) moderate, or 3) severe VMS will be recruited. Muscle and vascular function as well as CRF will be assessed at baseline and after 3 months in women who initiate VMS-specific therapy (HRT vs. SSRIs). Muscle function will be assessed as quadriceps strength (MVC), size (ultrasound), and contraction kinetics (nerve stimulation). Vascular function will be assessed as brachial flow-mediated dilation and carotid artery measures