

Agent-Based Models for Evaluating HIV Prevention Modalities in Sexual and Injecting Networks
Brandon Marshall, Brown University School of Public Health

Agent-based modeling is an individual-based simulation approach used to understand how micro-level interactions generate and influence macro-level phenomenon. We use an agent-based model to simulate HIV transmission dynamics in high-risk populations, including men who have sex with men and people who inject drugs. In this presentation, I will present results from two of our recent studies examining the effectiveness of two HIV prevention modalities—pre-exposure prophylaxis (PrEP) and syringe service programs (SSPs)—for mitigating HIV transmission in sexual and injecting networks. Both outbreak and established (i.e., high prevalence) epidemic settings were evaluated. Results demonstrate that HIV prevention programs are most effective when implemented early and at high coverage, due in part to disseminated (i.e., indirect) effects of the interventions on populations not directly receiving them. Future research directions will also be discussed.