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*The Role of Social Distance and Infectiousness in TB Transmission*

TB transmission is determined by an individual's infectiousness throughout the course of disease, combined with the exposure of other susceptible individuals. The course of an individual's infectiousness remains poorly understood and is likely highly variable. Efforts to accelerate the worldwide decline in TB, the deadliest infectious disease today, are primarily focused on early diagnosis and effective chemotherapies. Mathematical models, which are used to inform intervention strategies, largely assume uniform infectiousness and equal exposure between susceptible and infected individuals, neglecting the potentially powerful effects of social structure. We extend an individual-based TB transmission model to incorporate social distance, with differential exposure rates representing social structures (e.g., peers or familial relationships) or physical distances (e.g., household members, neighbors, community members). We discuss differences in transmission under multiple hypothesized social structures and assumed courses of individual infectiousness. We discuss the compensating changes needed in TB transmission parameters to reproduce the same prevalence trends, along with implications for further recommended intervention strategies.