Abstract Submitted
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Respiratory-borne Disease Outbreaks in Populations: Contact Networks and the Spread of Disease BABAK POURBOHLOUL, University of British Columbia Centre for Disease Control, LAUREN A. MEYERS, Section of Integrative Biology, University of Texas at Austin, MARK E.J. NEWMAN, Center for the Study of Complex Systems, University of Michigan, DANUTA M. SKOWRONSKI, ROBERT C. BRUNHAM, University of British Columbia Centre for Disease Control — A large class of infectious diseases spread through direct person-to-person contact. Traditional "compartmental" modeling in epidemiology assumes that in population groups every individual has an equal chance of spreading the disease to every other. The patterns of these contacts, however, tend to be highly heterogeneous. Explicit models of the patterns of contact among individuals in a community, contact network models, underlie a powerful approach to predicting and controlling the spread of such infectious disease and provide detailed and valuable insight into the fate and control of an outbreak. We use contact network epidemiology to predict the impact of various control policies for both a mildly contagious disease such as SARS and a more highly contagious disease such as smallpox. We demonstrate how integrating these tools into public health decision-making should facilitate more rational strategies for managing newly emerging diseases, bioterrorism and pandemic influenza in situations where empirical data are not yet available to guide decision making.

Babak Pourbohloul
University of British Columbia Centre for Disease Control

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